THE MONTHLY

Review

JUNE, 1944 - - - - - - - - CONTENTS

CANDEE—Yesterday-Today-Tomorrow 507

MEYER—Anodic or Cathodic Electrocleaning of Steel 511

GLASSTONE—The Fundamentals of Chemistry for Electroplaters—Part VIII 529

DEPARTMENTS

Abstract Section 544

Industry News 550

New Equipment 554

Branch News 565

Membership Report 587

Book Department 592

Branch Directory 594

Advertisers Index 596

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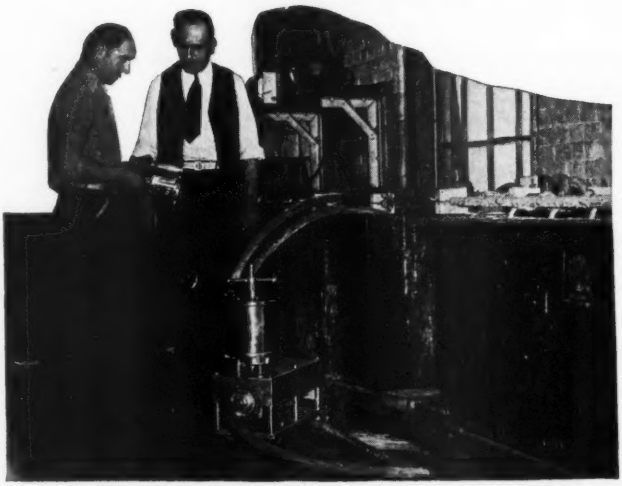

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Yesterday - Today - Tomorrow

By E. T. CANDEE

THE American Electroplater's Society was organized as a group of individual branches, each group having a complete organization and handling all phases of the business matters themselves. The election of members, the collection of dues, the maintenance of membership records, preparation of meetings and all other duties fell on the members of the Society. The success of any branch under this mode of operation depends upon the amount of time the active members put into their duties, and in some cases branches have been handicapped because there were not enough members who were willing to spend enough time for the proper functioning of the branch.

Of the many offices in a branch the two most important are those of the Secretary-Treasurer and the Librarian. It is the duty of the Librarian to get speakers for the year who will present material interesting to the members and thereby attract new members and maintain high percentage of the attendants at the sessions. The National Society for several years has prepared a speaker list to assist the Librarian but in most cases it has fallen to the lot of the Librarian to get the best speaker talent he can locally. In general the speaker list obtained by the National Officers are only those who can travel widely.

The duties of the Secretary-Treasurer have increased as the size of the branches has increased and also have been complicated by the various new things which have been added to his duties from year to year. At present he must prepare meeting notices and distribute them on time; he

must keep a set of financial records in condition so that they are acceptable to the Branch Board of Managers for inspection at any time; he must pay all bills after they have been authorized by the members; he must bill all members for their dues and keep accurate records as to their status; he must make out checks and remit the Per Capita Tax to the National Office four times a year; he must keep track of all members and make sure that members in good standing are still on the National Society's records and those that are not in good standing deleted; he must handle all correspondence concerning the branch activities with the National Office and he must take care of transfers to and from his branch, the correspondence being with the other branch involved. In other words we are asking a man, as a part time job for which he receives little or no pay, to conduct the affairs which take many hours of work and to carry on duties for which in some cases he is not properly fitted or does not have proper equipment.

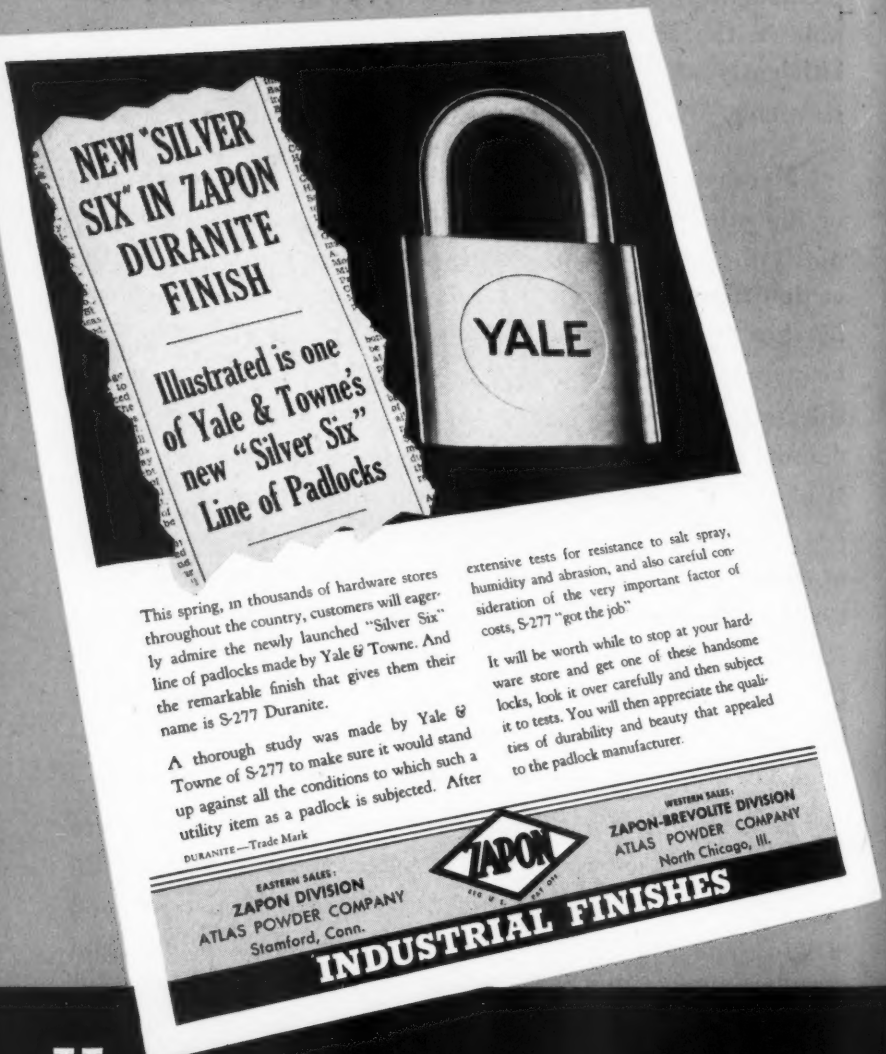
A system used by many National Societies releases part of this burden from the shoulders of the Secretary-Treasurer without affecting the branch affairs in any way, and it would seem wise to consider the adoption of a similar method in the A.E.S.

If the application blank of a newly elected member were sent to the National Office and the National Office notified of his election, the National Society could then bill the member for his dues and put him on the rolls as an active member in good standing. After that all bills to members could be sent out by the National Office and remittances would be made to each branch once a month for their portion of the dues to which they are entitled. If this was done properly the branches would have an accurate record of all members in good standing, the National Office would have the basic

membership records of the Society, and with the help available in the National Office the work could be done more efficiently and thereby reduce the burden of the branch secretary.

Members who wished to be transferred from one branch to the other would either notify their branch secretary or notify the National Office and the transfer would be effective at that time, both branches being notified so that their membership records would be correct. The fiscal year of the branches could be made to coincide with the fiscal year of the National Society and in that way the work of billing and making remittances would be completed within a short time. It has been found that the financial status of many branches has been weakened because of poor checking of the standing of members. In many cases this has made the branches practically bankrupt. With the matter being handled by the National Office and the reports going to the secretaries at frequent intervals, the status of the members would be brought to the attention of the officers of the branch and the tendency would be to suspend members after a short time.

The foregoing is not written in a critical mood as there are many branch secretaries who are keeping their records up to date and who are keeping their branch affairs in good order. However, there are some who are not doing this and the above suggestion is being made in an effort to help out all branches and reduce the burden on the branch secretaries to a minimum.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INDUSTRIAL FINISHES ... *For Your Products of Tomorrow*

Anodic or Cathodic Electrocleaning of Steel?

By DR. WALTER R. MEYER

Technical Director
The Enthone Company, New Haven, Conn.

IN the February issue of "Industrial Finishing," in an article on cleaning, G. C. Close said "Whether the work is to form the anode or the cathode is debatable." In the writer's opinion it may be debatable, but the evidence for electrocleaning of steel is greatly in favor of anodic cleaning. The fact that there is twice as great a volume of gas (hydrogen) formed at the cathode as gas (oxygen) formed at the anode has little bearing on actual cleaning efficiency. However, this idea has become so deeply rooted in the minds of platers that they seldom clean purely anodically but like to clean first cathodically and then anodically using a double throw switch. Based on hundreds of careful cleaning tests on known cleaner formulations and on commercial electrocleaners of many companies, I am of the opinion that anodic cleaning of steel is faster and more effective than cathodic cleaning, or cathodic cleaning with a short reversal of current. Some actual data will be given later.

NEGATIVE RADICALS MORE IMPORTANT IN CLEANING

A consideration of the constituents of cleaners will lead us to understand the reason for better cleaning at the anode. First in regard to the alkalies used, the cationic portions are almost always the same, namely sodium. This means the sodium ion migrates toward the cathode with a sodium ion concentration at the cathode interface not greatly different regardless of what alkali has been used, e.g. sodium carbonate, sodium hydroxide, sodium silicates. On the other hand, the negative portion of alkali cleaners are anionic and tend to migrate toward the anode. We would expect, therefore, greater variations in cleaning efficiency with different alkalis when anodic cleaning is done. The detersive effects of phosphate, pyrophosphate, metasilicate and hydroxyl ions would be different.

Likewise, most surface active materials, "wetting agents" and soaps ionize in such a manner that the organic portion of the wetting agent is anionic. Most cationic wetting agents are not stable or effective in alkaline solutions. Thus, sodium abietate, resinate, alkyl sulphates and sulphonates ionize with the organic portion of the surface active material migrating toward the anode. It should be obvious here that good surface tension lowering is no criterion for

good cleaning. Forget the tensiometer and stalagmometer when evaluating cleaners and surface active materials, and evaluate by actual cleaning tests. There are some non-ionic wetting agents available but for various reasons—salting out, instability, poor detergency, they are not generally used in electrocleaners. This is not meant to be a theoretical paper and so to the more practical aspects.

CLEANER TESTS

In the following tests, several types of contaminants were used. Steel panels were smeared with the oil under pressure and the panel was then baked at 350°F for 20 minutes to drive off volatile constituents.

The contaminants were:

A. Commercial anhydrous lanolin.

B. A widely used extreme pressure lubricant used for heavy and deep drawing operations and which contains a chlorinated compound.

C. A pigmented drawing compound containing palm oil.

A concentration of 8 oz./gal. was used and an operating temperature of 200°F.

TABLE I

Time to Clean To No Waterbreak
Current Density — 10 amp./ft.^{2}

CONTAMINANT A

	Anodic	*Cathodic*
Enthone Cleaner 100	75 sec.	90 sec.
Cleaner A—A commonly used proprietary cleaner containing rosin soap	90 sec.	100 sec.
Cleaner B—Another popular proprietary cleaner	3½ min.	4¾ min.
Cleaner C—Another proprietary cleaner	2½ min.	2½ min.
Sodium Orthosilicate	3½ min.	7 min.

TABLE II

Time to Clean To No Waterbreak
Current Density — 10 amp./ft.^{2}

CONTAMINANT B

	Anodic	*Cathodic*
Enthone Cleaner 100	3 min. (pitted)	3½ min.
Cleaner A	4½ min. (pitted)	5½ min.
Cleaner B	Over 15 min. (pitted)	Over 30 min.
Cleaner C	5¾ min. (pitted)	6 min. (film left)
Sodium Orthosilicate	14 min. (pitted)	Over 30 min.

TABLE III

Time to Clean To No Waterbreak
Current Density — 10 amp./ft.^{2}

CONTAMINANT C

	Anodic	*Cathodic*
Enthone Cleaner 100	15 sec.	30 sec.
Cleaner A	120 sec.	120 sec.
Cleaner B	not cleaned	not cleaned
Cleaner C	60 sec.	60 sec.
Sodium Orthosilicate	1½ min.	3 min.

The same relative results between anodic and cathodic cleaning were observed at higher current densities except, of course, the cleaning times were considerably reduced. There are cases when anodic cleaning can not be used and that is when a drawing oil is present on the work that contains chlorine. In the case of Contaminant B, it will be noted, that with anodic cleaning, pitting occurred in all cases. The pits were relatively deep and definitely harmed the steel. Whereas with cathodic cleaning there was no etching of the steel. Steel coated with drawing compounds containing chlorinated compounds are met only occasionally by the plater.

It will also be noticed that there is a great difference in cleaning rates between various commercial cleaners, and also that the presence of surface active materials assists greatly in cleaning speed as compared with simple alkalis.

CATHODIC CLEANING

Most alkali cleaners contain complex phosphates and caustic soda which are able to dissolve small amounts of metals in the cleaning solution. It has been observed that metals such as iron, tin, zinc, lead and copper will deposit out of a contaminated cleaning solution when the work is the cathode to form a smut that will interfere with adhesion of the electrodeposit. Reversal of the current for a short time will tend to remove tin and lead but does not remove all of the metallic smut. If an electrocleaner causes the steel to darken when made the cathode, particularly after two minutes of cleaning, it is an indication of metallic contamination and the cleaner should be discarded. However, the cleaner could be used as an anodic, or soak cleaner without the metallic impurities causing difficulty.

HYDROGEN EMBRITTLEMENT

When highly stressed steel parts, particularly high carbon steel are cleaned cathodically, there is some danger of hydrogen embrittle-

ment. There does not appear to be any correlation between the effects of pH or constitution of the cleaner on hydrogen embrittlement. The embrittlement in electrocleaning is not as severe as that involved in electroplating. However, it must be remembered that some hydrogen is dissolved in the metal during cleaning and this would contribute to the embrittlement normally obtained in plating. When steel is cleaned anodically there is no embrittlement from oxygen.

In summary, it may be stated that anodic cleaning is preferable in almost all cases except when there are chlorinated compounds present that might cause attack on the steel.

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American Electroplaters' Society

JUNE 12, 13, 14

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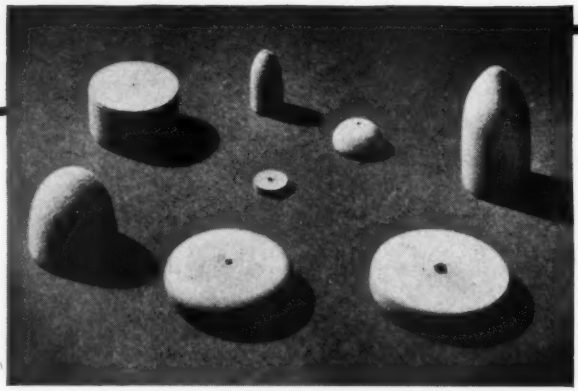

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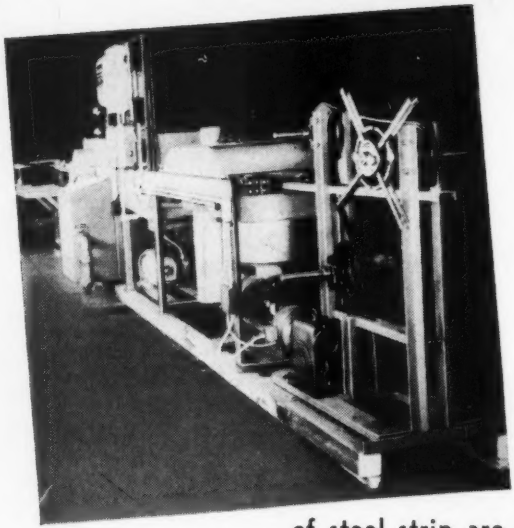

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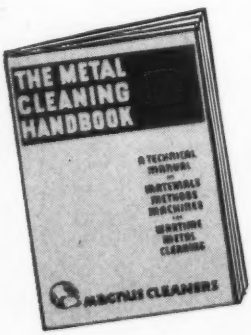

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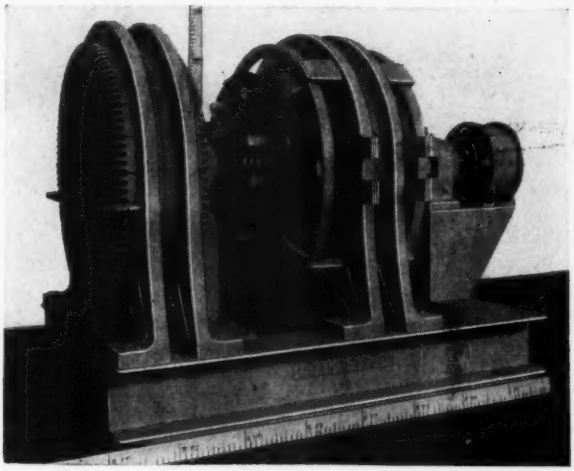

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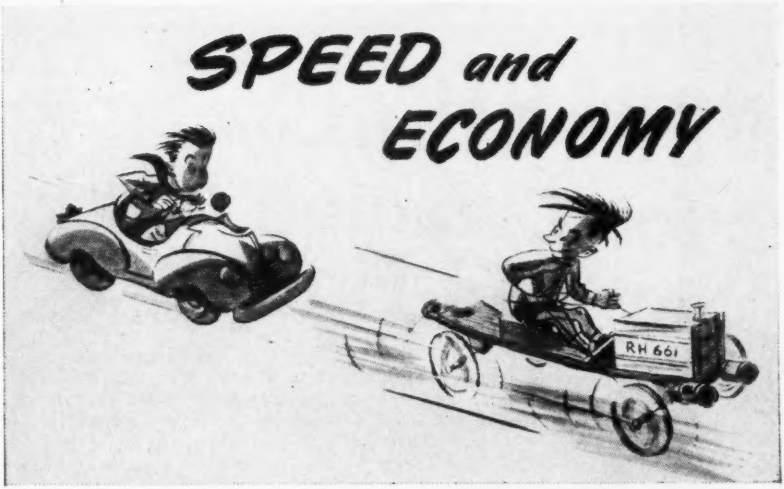

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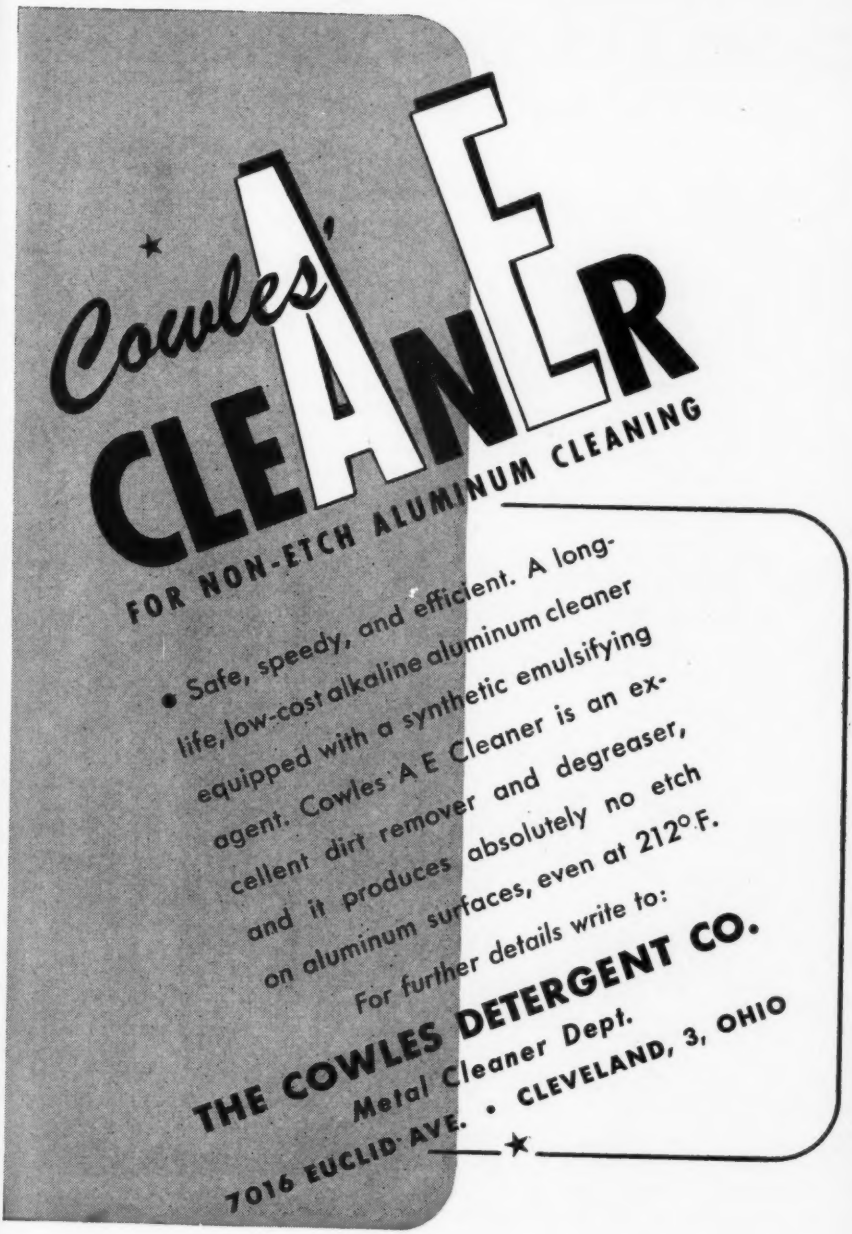
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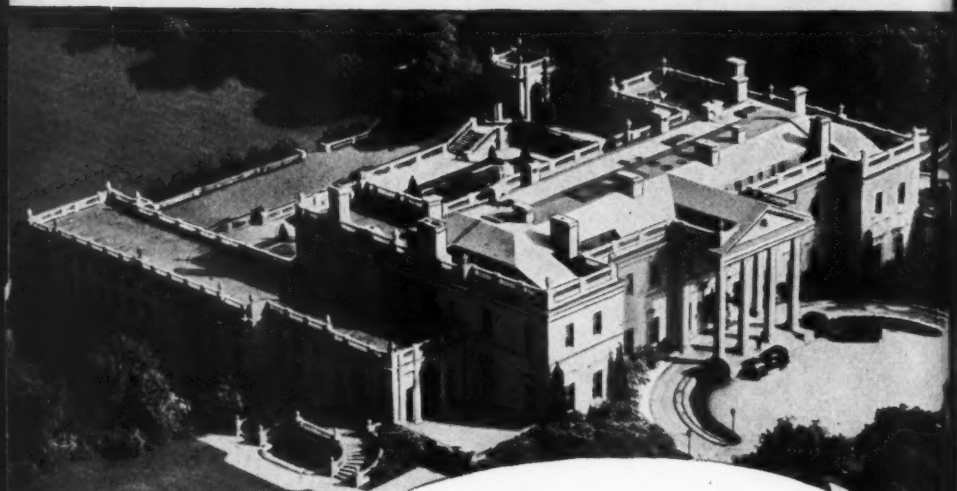

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The Fundamentals of Chemistry for Electroplaters

Part VIII. The Meaning and Applications of Valence

By SAMUEL GLASSTONE, D.Sc., Ph.D.

FORMULAS AND VALENCE

IT will have been noted from the preceding article of this series (Part VII, *Monthly Review*, May 1944) that the formula of silver cyanide was written as AgCN, while that of zinc cyanide was represented by $Zn(CN)_2$. In other words, in silver cyanide one atom of silver (Ag) is united with one cyanide (CN) group; in zinc cyanide, however, one atom of the metal zinc is united with two cyanide groups. A somewhat similar situation is observed when comparing other related compounds; for instance, sodium chloride is NaCl, calcium chloride is $CaCl_2$, and aluminum chloride is written as $AlCl_3$. The formula of sodium sulfate is Na_2SO_4, but nickel sulfate is $NiSO_4$; in the former there are two atoms of the metal sodium to one sulfate group, but in the latter there is only one metallic (nickel) atom. An examination of the formulas of numerous substances has brought to light the fact that every element or group of elements, such as cyanide, sulfate, nitrate, carbonate, etc., possesses a definite combining power which is described in terms of the property known as the *valence*. A knowledge and understanding of valence is of the utmost importance in connection with the writing of chemical formulas.

DEFINITION OF VALENCE

There are several ways in which the valence of an element can be defined; for the present it may be described as the number of atoms of hydrogen (or of chlorine) which combines with one atom of the given element. Hydrogen and chlorine each have a valence of unity, for one atom of hydrogen combines with one other atom of the same element, or with one atom of chlorine to form H_2 (molecular hydrogen) and HCl (hydrochloric acid), respectively. These elements are therefore said to be *univalent*. The valence of any element may then be defined as the number of atoms of any univalent element which combine with one atom of the given element. Other univalent elements, in addition to hydrogen and chlorine, are sodium, potassium and silver; this is shown by the formulas of the respective chlorides,

viz., NaCl, KCl and AgCl, in which one atom of the metal is united with one atom of the univalent atom chlorine.

If an element has a valence of two, that is to say, if one atom united with two univalent atoms, the former is said to be *bivalent.* An important example of a bivalent element is oxygen, since one atom combines with two atoms of the univalent element hydrogen to form water, i.e., H_2O. Among other bivalent elements, mention may be made of nickel, zinc and cadmium; the formulas of the chlorides are $NiCl_2$, $ZnCl_2$ and $CdCl_2$, respectively. When one bivalent element combines with another bivalent element, they do so by equal numbers of atoms. Thus we have NiO for nickel oxide, ZnO for zinc oxide, and so on. When an atom of a given element unites with three univalent atoms as, for example, the element aluminum in aluminum chloride, $AlCl_3$, the element has a valence of three and is said to be *trivalent.* Chromium is trivalent in its chromic salts, e.g., $CrCl_3$, and so also is gold in the auric compounds.

VALENCE OF RADICALS

It has been found that certain groups of elements behave as a single element or unit in chemical combination; these are often referred to as compound radicals or, in brief, as *radicals.* Instances of such radicals have already been given, e.g., cyanide, sulfate, nitrate and carbonate. It is possible to ascribe a definite combining power or valence to a radical just as to an element. Since the cyanide radical forms such compounds as HCN, NaCN and KCN, where H, Na and K (hydrogen, sodium and potassium) are univalent atoms, it is clear that the CN radical is also univalent. This explains why the formula of silver cyanide is AgCN while that of zinc cyanide is $Zn(CN)_2$, as mentioned at the outset. Silver is a univalent element, and so one atom unites with one univalent CN radical; zinc, however, is bivalent, and so one atom combines with two CN groups.

From the formula of sulfuric acid, H_2SO_4 (see Part VI, April 1944), it can be seen that the sulfate (SO_4) radical has a valence of two, i.e., it is bivalent, since it combines with two atoms of hydrogen. For this reason sodium sulfate has the formula Na_2SO_4, sodium (Na) being a univalent element, while nickel sulfate is $NiSO_4$, since nickel is bivalent. The nitrate radical (NO_3) is univalent, while the carbonate group (CO_3) is bivalent. It is therefore an easy matter to show that the formula of potassium nitrate must be KNO_3, whereas that of potassium carbonate is K_2CO_3. In each case the number of univalent atoms of the metal potassium (K) combining with one radical is equal to the valence of the latter. If the metal were bivalent, as with nickel or cadmium, the formulas of the nitrates would be $Ni(NO_3)_2$ and

$Cd(NO_3)_2$, while those of the carbonates are $NiCO_3$ and $CdCO_3$, respectively.

VALENCE RULE

It may be stated, as a general rule, that the total valence number of one element or radical must be equal to the total valence number of the element or radical with which it is combined. Consider, for example, zinc cyanide; the formula is $Zn(CN)_2$. The valence of the one atom of zinc is two, and the total valence number of the two cyanide radicals is also two. The same is true for zinc sulfate ($ZnSO_4$), nickel sulfate ($CdSO_4$), cadmium chloride ($CdCl_2$), and so on. In such compounds as NaCl, KCN, AgCN, $AgNO_3$, etc., the valence number of each combining unit is one. On the other hand, in aluminum chloride ($AlCl_3$), the valence of the aluminum atom is three, while the total valence number of the three chlorine atoms is also three.

The general rule just given may be put in another form which is of direct practical value; thus, the product of the number of atoms (or radicals) and the valence must be the same for the two combining parts of any compound. That this is true may be readily verified by means of any of the formulas already given. The practical application of the rule may be illustrated by reference to a slightly more complicated case. Suppose it is required to find the formula for aluminum sulfate. The valence of aluminum is three while that of the sulfate radical is two; it follows, therefore, that two aluminum atoms must unite with three sulfate radicals, thus giving the formula $Al_2(SO_4)_3$ for aluminum sulfate. The product of the number of atoms (or radicals) and the valence is equal to six in each case.

EXPERIMENTAL DETERMINATION OF VALENCE

In the foregoing discussion the valence of an atom or radical has usually been derived from a knowledge of the formulas of suitable compounds. Such formulas can frequently be obtained by the methods referred to in Part VI (April 1944), but sometimes it is convenient to reverse the procedure and to derive the formula of a compound from a knowledge of the valences of the combining units. Fortunately a direct experimental method is available for the determination of the valence of many elements. If V is the valence of any element, then according to the definition already given, it follows that one atom of the given element combines V atoms of a univalent element or $\frac{1}{2}V$ atoms of a bivalent element, such as oxygen. Hence, one atomic weight of the element combines with $\frac{1}{2}V$ atomic weights of oxygen; that is to say, a weight of the element equal to its atomic weight divided by V combines with one-half an atomic weight, i.e., 8.00 parts by

weight, of oxygen. Referring back to Part II (December 1943), it will be seen that the weight of an element which unites with 8.00 parts by weight of oxygen is the equivalent weight of that element. It follows, therefore, that

$$\frac{\text{Atomic weight}}{V} = \text{Equivalent weight},$$

or

$$\frac{\text{Atomic weight}}{\text{Equivalent weight}} = V \text{ (i.e., the valence)}.$$

The valence of any element is thus equal to its atomic weight divided by the equivalent weight. As already seen in previous articles, both atomic and equivalent weights are experimental quantities, and so the valence which must be a whole number, is capable of direct experimental determination. It will be recalled from Part V (March 1944) that atomic weights are frequently determined by multiplying the experimental equivalent weight by a whole number, e.g., one, two or three; this number is, in fact, the valence of the element. For example, the atomic weight of lead is exactly twice the equivalent weight in its stable compounds; hence the valence of lead in these compounds is two.

Some elements, particularly copper, gold and chromium, have different equivalent weights and hence different valences in different series of compounds. This important aspect of the subject of valence will be considered in the next article.

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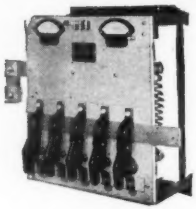

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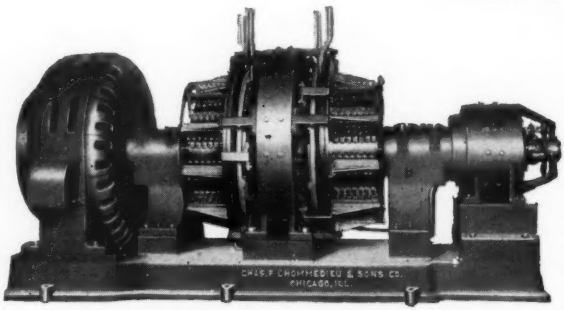

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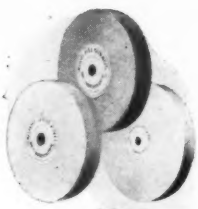

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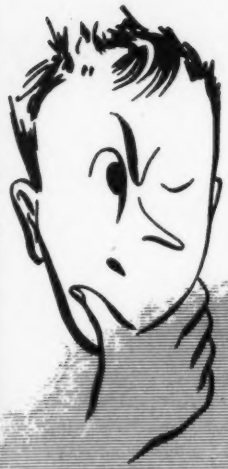

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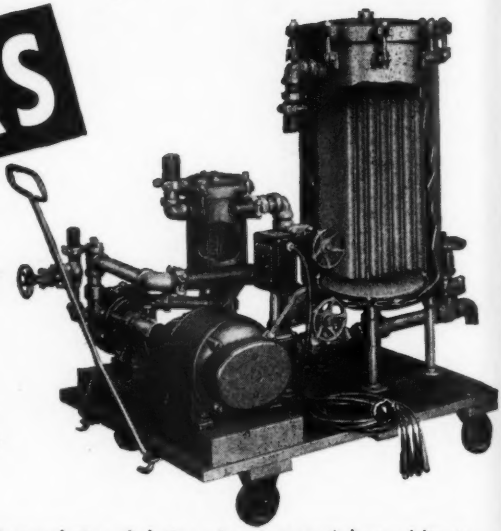

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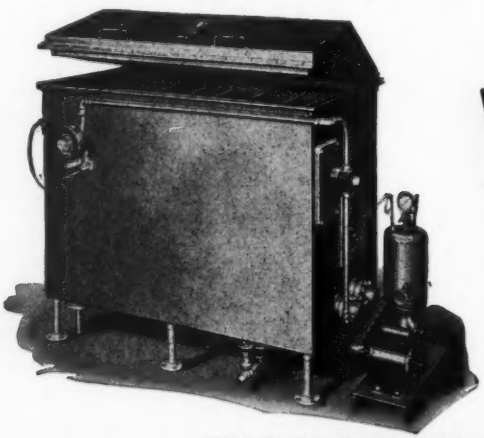

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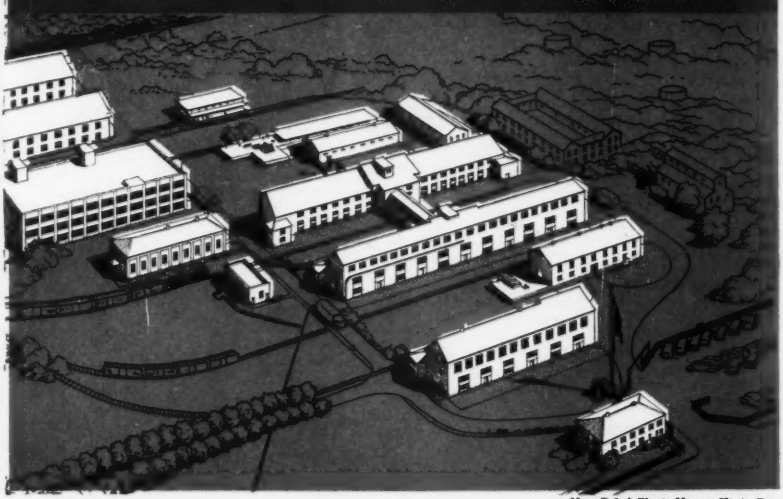

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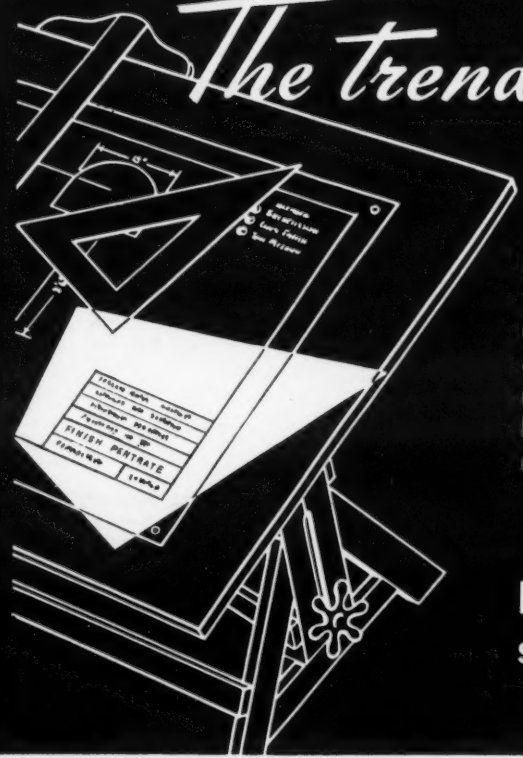

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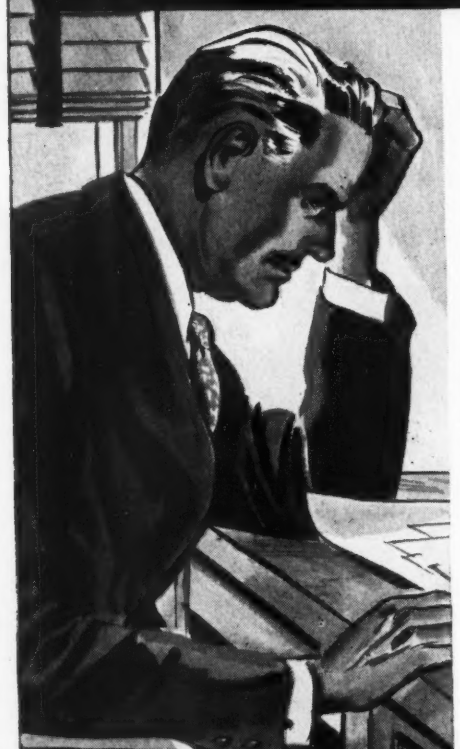

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MAURICE R. CALDWELL

Chairman Program and Educational Committee

Vanillin as Addition Agent in the Deposition of Zinc. WALTER ECKARDT. *Oberflachentech.* **18,** 170-1 (1941); *Chem. Zentr.* **1942, I,** 1936.—Bright Zn deposits can be obtained by addition of vanillin to a K Zn cyanide plating bath if the cathode is kept in motion. If, however, besides a very small amount of vanillin (0.5 g./l.), small amounts of Fe, Ni or Mo are also added to the bath very bright Zn deposits are obtained even with a stationary cathode. A typical bath is: ZnO 50, NaOH 30, NaCN 100, MoO_3 4, vanillin 0.5 g./l.; anode surface twice the cathode surface. From time to time, insoluble anodes have to be employed to lower the Zn concn.

M. HARTENHEIM, *Chemical Abstracts*

Corrosion-Resisting Nitriding. By V. D. YAKHINA. *Vestnik Inzhenerov i Tekh.* **1940,** 532-5; *Chem. Zentr.* **1941, I,** 2311-12; *Chem. Abstracts* **37,** 4042 (1943). Nitriding may be used for a decorative surface treatment for steel as a substitute for nickel or zinc plating. The steel must be ground and polished, and nitrided for 1-1.5 hours at 1000°F., or 30 minutes at 1450°F., in a current of NH_3. After nitriding, the surface is either lightly polished with French chalk, or the appropriate tempering color is developed by heating to not less than 570°F. for not less than 2 hours. Corrosion tests showed that the nitrided surfaces were resistant to the action of fog and tap water and that they acquire a protective oxide coating when exposed to water vapor, but are seriously attacked by sea water and acids.

ERNEST H. LYONS, JR.

The Character of Alloys from the Viewpoint of the Electrodepositer. HERM. WAGNER. *Z. Metall- u. Schmuckwaren-Fabrik, sowie Verchrom.* **22,** 396-7, 444, 448 (1941); *Chem. Zentr.* **1942, II,** 336. The character, the diagrams of state, and the grain structure of alloys are discussed. Alloys made by electrodeposition, e. g., brass, and the action of coloring baths are dealt with. Data from the lab. of the Langbein-Pfanhauser works show that the Cu/Zn ratio in brass deposits depends on salt concentration in the bath, metal ratio in the bath, concentration of free KCN, pH and temperature. Nonmetals such as C and P also can be cathodically deposited, as is the case if Zn, Cd and Sn are deposited from an oxalate solution or Fe, Ca and Ni from formate, oxalate and citrate solutions. Fe deposited from an Fe NH_4 metaphosphate solution contains P, and Ni deposited from an ammoniacal sulfide-containing solution S.

FREDERICK C. NACHOD, *Chemical Abstracts*

Determination of Tin Coating Weights. By G. H. BENDIX, W. C. STAMMER and A. H. CARLE. *Ind. & Eng. Chem., Analytical Ed.* **15,** 501-4 (1943). Most methods for determining the weight of tin coatings on steel are slow because time is required to dissolve the tin, while electrolytic methods are fast, but subject to a number of errors. By study of these errors, an accurate method has been evolved. The carbon cathodes are surrounded by porous cups filled with 1-4 hydrochloric acid. The sample is suspended between the cups by a magnet. The whole assembly is immersed in 200 ml. 1-7 hydrochloric acid, and 20 ml. of solution containing 2.78 g. potassium iodate, 15.6 g. potassium iodide, and 0.005 g. sodium hydroxide per liter, is added. A current of 3 amperes at 3-5 v. is allowed to flow for 2-5 minutes, with the specimen as anode. The solution is then titrated with sodium thiosulfate (20.27 g./l., with 0.14 g. sodium

carbonate) using starch as an indicator. The following formula can be used: $(V_{iodate} \times N_{iodate} - V_{thiosulfate} \times N_{thiosulfate})\ 118/2 \times 17.28 =$ pounds of tin per base box.

N = normality
V = volume in liters

The iodine in the electrolyte oxidizes the stannous ions dissolving from the anode to stannic, and eliminates the need for an atmosphere of carbon dioxide. The titration serves to measure the amount of iodine which has reacted with the tin. The effect of different factors is described in some detail. The accuracy of the method compares favorably with that of the Sellars and loss-of-weight methods, and is superior to them on electrodeposited tin coatings on sheet steel.

ERNEST H. LYONS, JR.

Hydrogen Pits in Nickel Deposits. E. WERNER *Metallwirtschaft* **20,** 1143-7 (1941); *Chem. Zentr.* **1942, I,** 2061.—A collection of illustrations of the main causes and the prevention of the H pits in Ni deposition.

L. H. SEABRIGHT, *Chemical Abstracts*

Use and Misuse of the Salt-Spray Test as Applied to Electrodeposited Metallic Finishes. C. H. SAMPLE. *Proc. Am. Soc. Testing Materials* Preprint No. **32,** 3 pp. (1943.)—Electrodeposited metals may be either anodic or cathodic to the basis metal. At a discontinuity, the greater the potential difference between the cathodic coating and the basis metal, the greater the corrosive action, under salt-spray conditions, at that point. For evaluating the porosity of cathodic-type coatings a properly standardized salt-spray chamber is useful. The exposure time should be based on results from actual service. Some service conditions tolerate slight porosity, but to judge this by salt-spray testing is difficult. For determining thickness of coatings anodic to basis metal other methods are preferable to salt spray. The lack of experimental data correlating service behavior with salt spray of the various coating-basis metal combinations would indicate that the test does not merit its current extensive use in specifications.

F. W. FINK, *Chemical Abstracts*

Possible Substitutes for Zinc Coatings on Steel. ANON. *Am. Iron Steel Inst., Contrib. Met. Steel No.* **4,** (1941.)—Both metallic and org. coatings are considered. Of the metallic coatings, Pb seems to be the most promising. The possible methods for applying Pb-base coatings are discussed. Pretreatments to be used prior to painting are reviewed. Several commercial paint systems are also described.

J. L. GREGG, *Chemical Abstracts*

The Effect of the Preliminary Treatment of Iron on the Strength of Pigment-Varnish Films. N. D. SHUMOV. *Tekhnika Okraski* **1940,** No. 6, 9-11; *Khim. Referat. Zhur.* **4,** No. 3, 123-4 (1941.)—Specimens of phosphatized, oxidized (by chem. and hot methods), tinned and Zn-plated Fe were covered with the No. 1426 enamel and tested for corrosion in a moist chamber, in sea water and under other conditions. The tinned specimens were best preserved. Phosphate and oxide bases obtained by heating Fe to 275-300°C. were best for protecting Fe. The enamel lost its elasticity on the phosphate base. Poorest results were obtained with Zn-plated Fe and with Fe oxidized by Basic $NaNO_2$ soln.

W. R. HENN, *Chemical Abstracts*

NEW PATENTS

November 16, 1943

Patent #2,334,177—Continuous Strip pickling by Steve J. Dishanzi assigned to National Steel Corporation. A method of pickling strip steel continuously in which a series of tanks is used, the first tank in the series being discarded when the metal content exceeds the allowable limit and the next tank in line replacing it with the last tank being made up fresh.

Patent #2,334,210—Manganese electrolyte purification by Karl M. Leute assigned to Electro Manganese Corporation. A process of purification wherein the anode compartment solution is purified of iron, cobalt and nickel and pumped into the cathode compartment.

November 30, 1943

2,335,354—Polishing stainless steel and iron by James N. Ostrofsky assigned to Rustless Iron and Steel Corporation. A method of electropolishing stainless steel with a solution of an aliphatic carboxylic acid such as acetic or citric acid and sulfuric acid with less than half water.

2,335,774—Process for making prosthetic articles by electrodeposition of metals by Charles A. J. Landry. A method of making the articles mentioned by making a cast and electroplating the surface of the article selectively.

2,335,821—Palladium plating bath by Edmund M. Wise and R. F. Vines assigned to International Nickel Company. A chloride type palladium plating solution is covered.

2,335,826—Method and means of protecting light metal surfaces by P. F. George assigned to Dow Chemical Company. A method of protecting magnesium and aluminum tanks containing hydrocarbons such as gasoline from corrosion.

November 23, 1943

2,334,698—Polished Metal and a method of making the same by Charles L. Faust assigned to Battelle Memorial Institute. A method of electropolishing stainless steel by anodic treatment in a water solution of phosphoric and sulfuric acids.

2,334,699—Electrolyte for the polishing of metal surfaces and methods of use by Charles L. Faust assigned to B. M. I. A solution for electropolishing iron and nickel alloys consisting of sulfuric and phosphoric acids with water.

Dan Wittig Night

THIRTY-ONE years ago Mr. Daniel Wittig joined the Milwaukee Branch A.E.S. but little did he realize that today, May 11th, 1944, he would be seated in the place of honor of the Branch for his years of conscientious work. Mr. Wittig, an honorary member of the Supreme Society, was duly conferred with all the praise that the men attending the Dan Wittig Night dinner could humbly offer. Mr. Smallman of Chicago, the master of ceremonies, offered some stories of Mr. Wittig's fishing trips (which, by the way, were quite interesting). Mr. Jack Geissman, also a long time friend of Mr. Wittig, told something of the days before he married. Mr. Robert Steuernagel Sr. explained the reasons for Mr. Wittig's success (something about saving fishing line) and his ability to retire from business so young. Mr. Frank Hanlon of Chicago (who suffers from cacoethes loquendi) said a word or two about the Milwaukee Branch's fine record due to the endeavor of men like Mr. Wittig. He also had a few stories to tell and some poems on the order of the stuff composed by Wordsworth, Shelley, and Keats. Mr. John Miszewski Sr., another of the Branch's first members, reminisced about Mr. Wittig's earlier years in the plating field.

The Elk's Club vibrated with song after the dinner and eulogies ended. A quartet from Racine entertained with novelty songs and some barber shop harmony. Among those present were men from California, Indiana, Michigan, and Illinois. Mr. Robert Steuernagel Sr., Mr. Joseph Birbaum, Mr. Frank Marx, Mr. Henry Binder, Mr. Herman Peterson, Mr. Jack Geissman, the party committee, should be given credit for the party's success.

We of the Milwaukee Branch feel that the party was a bang up affair because of the fine turnout to pay tribute to a man who has given time and hard work to make the Branch the successful society it is today. All the men in the Branch have benefited directly or indirectly from the guidance of Dan Wittig.

JAMES DURNFORD, *Secretary*

Meeting the Plating Needs of *Tomorrow*

3 SIMPLE STEPS *to take now*

1. Tell H-VW-M Plating Headquarters about your finishing problem.

2. Discuss with the H-VW-M Engineering Staff the design and material of the product; present equipment and facilities; type of finish contemplated.

3. Study and weigh H-VW-M recommendations for methods, equipment, supplies; their applications; the result you can expect to obtain.

Just as plating played its part in producing many of yesterday's finest products, so today's war-time accomplishment is a promise of the output of more and better products coming from the plating line of tomorrow.

Through many new and amazing developments, plating has helped create miracles in the essential production needs for armament – and will continue its achievements in revolutionizing finishing problems of the future.

To meet *your* needs of tomorrow, we at Plating Headquarters are ready today to discuss and study the latest finishes for old products being redesigned or retooled – for new products being engineered and planned. We are prepared to recommend the newest and latest techniques in plating, polishing and finishing – based on present practice and seasoned by 124 years' experience in the metal processing industry.

HANSON-VAN WINKLE-MUNNING CO. MATAWAN, NEW JERSEY, U.S.A. SINCE 1820

Manufacturers of a complete line of electroplating and polishing equipment and

HANSON-VAN WINKLE-MUNNING

MATAWAN, NEW JERSEY

PLANTS: Matawan, New Jersey . . Anderson, Indiana . . Bridgeport, Conn.

SALES OFFICES: Anderson · Bridgeport · Chicago · Cleveland · Dayton · Detroit · Elkhart · Milwaukee · New Haven · New York · Philadelphia · Pittsburgh · Springfield (Mass.) · Syr

NEW!
A "SLIDE RULE" FOR PLATERS

The Jernstedt Electroplating Computer accomplishes the following:

- Computes chemical additions required in a plating bath of any gallonage, including cyanide additions for complexing metal salts.
- Indicates weight of metal deposited on unit area, given the thickness. Metal costs can be quickly determined.
- Lists usual cathode efficiencies of all modern electroplating solutions.
- Gives plating time required to deposit a given thickness of any metal.
- Computes current density required to produce a deposit of given thickness.
- Indicates thickness of deposit resulting from an established plating time at a known current density.
- Provides space for recording the standard composition of twenty different plating solutions. The normal temperature of operation and gallonage of each solution can also be recorded.

The Jernstedt Electroplating Computer does for the plater what a slide rule does for the engineer. Lengthy calculations are eliminated by the use of simple logarithmic scales. With it, you can save time and prevent costly errors.

Rugged and simple in design. Made from a special type of synthetic resin, highly resistant to chemical action and normal handling.

Economically priced at $7.50, f.o.b. Matawan, N. J., this is one "tool" you will surely want to have handy in your plating department or shop. Send check or money order for your Computer today.

- Lists component parts in per cent by weight of salts commonly-used in electroplating.
- Lists commonly-used metric conversion equivalents.

Manufacturers of a complete line of electroplating and polishing equipment and supplies

HANSON-VAN WINKLE-MUNNING CO.

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INDUSTRY NEWS

SYMPOSIUM on the Significance of the Hardness Test of Metals in Relation to Design

This symposium, recently issued by the American Society for Testing Materials, includes notes on the indentation hardness test by Prof. J. M. Lessells, with conversion tables and a short selected bibliography. There are technical papers on present types of hardness tests by Prof. S. R. Williams, and on fundamentals of hardness testing by S. L. Hoyt, followed by interesting discussion contributed by other authorities, and finally, the tentative hardness conversion tables for steel showing the relationship between diamond pyramid hardness, Rockwell and Brinell values, A.S.T.M. designation: E 48. This is the second of a series of symposiums being sponsored at periodic intervals involving critical discussion of the significance of various tests of metals. Copies of this 60-page booklet in heavy paper cover can be obtained from A.S.T.M. Headquarters, 260 S. Broad St., Philadelphia 2, Pa., at 75 cents each.

DETREX PROMOTES PFLUG

W. F. Newbery, Industrial Sales Manager of Detrex Corporation Detroit, announces the appointment of R. W. Pflug as Manager of the company's Central Region territory which comprises the states of Michigan. Ohio, Indiana, Kentucky and West Virginia.

Mr. Pflug was previously manager of sales and service in the North Central Region. New larger branch headquarters have now been established in Detroit as well as in other principal cities which will facilitate the handling of orders and service thereby speeding metal cleaning assistance of industry.

P. W. Moehle, as Divisional Manager, will coordinate service and sales in the southern section of the Central Region covered by the Dayton Branch office.

Detrex Corporation manufactures Detrex Solvent Degreasers, Alkali Emulsion and Petroleum Spirits Washers, Triad Alkali Cleaning Compounds and Perm-A-Clor and Triad Degreasing Solvents.

DETREX CORPORATION ENLARGES BRANCH OFFICE ORGANIZATION

To provide the most efficient customer service possible, Detrex Corporation, Detroit 27, Michigan, manufacturers of Detrex Degreasers, Washers, Perm-A-Clor and Triad Degreasing Solvents and Triad Alkali Cleaning Compounds has enlarged two eastern sales and service offices and added another in the midwest.

The Eastern Region headquarters in New York City are now located in the Empire State Building, Suite 4113. It is under the direct supervision of Stanley A. Harris, Eastern Region Manager.

The Philadelphia branch office has been moved to 12 South Twelfth Street. Wayne Gaddy, Philadelphia Division Manager, is in charge of this office.

A new branch office for the Indiana territories has been opened in Indianapolis at 11 South Meridian Street. Charles M. Munns is the Division Manager in charge of this new office.

In their nation wide coverage of sales and service for Industrial cleaning equipment and materials Detrex now has a total of nineteen branch offices in major cities. Of these, fourteen will handle orders, correspondence and service direct with customers and prospects. Releases for cleaning materials will be made from warehouses conveniently located in the various industrial centers covered by each of these branch offices.

FOREMAN PLATER WANTED

A large mid-western company is most anxious to obtain the services of a foreman plater. Applicants must be familiar with all plating procedures, particularly brass, copper, nickel and chrome plating. It will be necessary for him to understand oxidizing. The plant handles a large number of small items hence applicants should be familiar with high speed production. Write in care of the *Monthly Review*, Dept. MR-6.

PENN SALT APPOINTS CORBIN

The Pennsylvania Salt Manufacturing Company announces the appointment as of May 6 of Gilbert H. Corbin, formerly Field Sales Manager of its Laundry & Dry Cleaning Division, to be District Sales Manager in charge of the Company's Minneapolis office. Mr. Corbin has been associated with the Company's Laundry & Dry Cleaning Division since it was established in 1940, following the purchase of the Sterling Products Company. He had been associated with the latter Company for about thirteen years.

The Company believes that Mr. Corbin's transfer to the Heavy Chemical Division will place the Minneapolis office in charge of a man who will ably carry on the splendid work which Thomas M. Gillespie has done in the Wisconsin territory during the past thirteen years. Tom Gillespie leaves the Company to establish his own business as a manufacturers' agent serving the pulp and paper industry with best wishes for his success from his former associates.

MERRIL THOMPSON PASSES

After a series of operations starting with appendicitis death came February 26th to Merrill Thompson. Mr. Thompson had a host of friends, particularly in the Dayton and Grand Rapids Branches. His passing is mourned by those who knew him personally as a great loss.

LEE & PEARCE TO SPECIAL CHEMICALS

Special Chemicals Company, 30 Irving Place, New York City announces the appointments of Ralph H. Lee and Walter H. Pearce to its staff since January 1944.

Ralph H. Lee's duties will comprise Office management, Sales, and Sales promotion. Mr. Lee brings with him 17 years' experience obtained with the Grasselli and Electrochemical Divisions of DuPont and his many friends will have the benefit of this technical background.

Walter H. Pearce, who will act as development Engineer, at one time was Instructor of Chemistry and Librarian of City College, New York, and more recently with Weisberg and Greenwald and W. L. Maxson Corporation. Mr. Pearce will handle the Chemical, Research and Development work.

GEIGER ELECTED V-P UNITED CHEMICALS, INC.

Marlin G. Geiger presently a Vice-President and Director of Westvaco Chlorine Products Corporation and Resident Manager of that company's South Charleston Plant has been elected Vice-President and Director of the United Chemicals, Inc.

Through its ownership of Barium Products, Ltd. with plants at Modesto and San Francisco, Barium Products, Ltd. is an important factor in the production of chemicals for military pyrotechnics now so important in protective smoke, rockets, flares, incendiary bullets and bombs. United Chemicals, Inc. also owns Monarch Chemical Company, a leading manufacturer of baking powder and the Curtin-Howe Corporation, a pioneer in wood-preserving chemicals and processes.

Mr. Geiger will continue as Resident Manager of the Westvaco South Charleston plant.

TECHNICAL SERVICE
REPRESENTATIVES

Due to growing demands for Oakite service we require several men with previous contact and service experience, with broad knowledge of industrial and manufacturing operations or mechanically inclined. Trained at our expense to qualify in proper use and servicing of our materials which are so essential in processing, maintenance and cleaning operations in industry. Salary to start, commission later. Free to relocate in other sections of country. Car necessary.

OAKITE PRODUCTS, INC.
22 Thames St. New York 6, N. Y.

ELECTRO-PLATING AND FINISHING EXPERT

Man with broad experience in all kinds of metal finishing operations, especially electroplating needed by our technical service organization. Must be capable of meeting all types of problems encountered in metal industries in cleaning, processing and maintenance operations. Headquarters New York. Some traveling.

OAKITE PRODUCTS, INC.

22 Thames St. New York 6, N. Y.

CRANE IN BUFFALO AREA

Ed. Crane has been appointed industrial sales engineer in the Buffalo area for the Brown Instrument Co., Philadelphia precision industrial instrument division of Minneapolis-Honeywell Regulator Co. Mr. Crane has been transferred from the New York City office. He will include the northwest section of New York State in his territory.

OAKITE CONFERENCES

Concurrently held in New York, Chicago and Los Angeles were the Oakite Third War Production Conferences on cleaning, de-scaling, de-rusting, degreasing and related production and maintenance operations. Participating with the entire Field Technical Service Representatives were the staffs of the Mechanical Engineering, Chemical and Research Laboratories and General Headquarters of Oakite Products, Inc.

These two-day sessions were devoted to the collating of field experience in order to determine the best and most practical methods for stepping up wartime production through speedier cleaning, due consideration being given to the emergencies of manpower and the shortage of time. Also discussed were concrete, workable techniques for prolonging equipment life; improving plant sanitation and maintenance; faster, more thorough cleaning in repair and overhaul procedures.

Of particular interest to metal-working plants were the many new developments in Oakite materials either now available or shortly to be released. The data exchanged by the Technical Service Representatives revealed successful methods for improving adhesion of organic finishes to ferrous metals; prevention of rust between production operations. Preparation of aluminum for spot welding, anodizing, Alroking, painting and other surface finishing operations; stripping identification paint from aluminum and aluminum alloys. Preparation of basis metals for electroplating. Study of coolants and lubricants in machining operations.

Data and information resulting from the discussions held at the various meetings are freely available to all through the medium of the Oakite Technical Field Service.

BUFFALO BRANCH PICNIC

The Buffalo Branch will hold its seventh annual picnic at Jamestown, New York, Saturday, August 12th, 1944. There will be games for adults as well as kiddies, refreshments served during the day with a dinner served in the evening. Door prizes and other drawing contests will prevail. All friends are invited to attend. A complete program will be available later.

HOYLE JOINS AMERICAN BUFF

Edward W. Hoyle, known to the plating, polishing and buffing industry for more than twenty years, now joins the rapidly growing American Buff Company of Chicago.

Mr. Hoyle is especially well acquainted throughout the Middle West. He served on the Board of Managers, Chicago Branch, of the American Electroplaters' Society, during the past year. He will continue to serve his old friends and customers of American Buff Company with whatever engineering help required in the solution of buffing and polishing problems.

BOGLE PASSES

John D. Bogle, 55, well known electrical engineer at Udylite Corporation for many years, died suddenly May 9th in Detroit.

John Bogle was a graduate of Center College, Ky., George Washington University, Washington, D.C., and the University of Michigan, class of 1910 electrical engineers. He was a member of The Detroit Engineering Society and A. I. E. E.

In his early career he assisted in the planning and erection of some of the country's largest hydro electric plants.

Later he became well known in the temperature control, oil burning equipment, and metal finishing field where he held several important patents.

Brief services were held at his Detroit home May 11th and internment was at Arlington Cemetery, Chicago.

NEW HOME FOR FORMAX

The Formax Manufacturing Company, of Detroit, producers of polishing and buffing compounds, has moved to larger quarters. The new plant, located at 3171 Bellevue Avenue, is devoted entirely to the creation and production of de-burring, finishing and polishing requirements for a major portion of America's armament manufacturers.

Formax Manufacturing Company is not a war-born giant but rather, had its beginning with the pre-war automobile industry.

Today, in the midst of war, Formax is serving them still—and scores of others—helping them achieve percision-smoothness on aircraft and marine propellors, on piston rings, connecting rods and moving parts.

Formax is the lengthened shadow of the "Four Macs"—Howard, Ed, Joe and Dick McAleer—a fighting team if ever there was one.

The new plant is built around a modern laboratory and new experimental facilities which enables them to produce a complete line of buffing and polishing wheels together with compounds.

LEACREST PARTY

Gas restrictions forced the cancellation last year of the Leacrest party, but this year on May 6th, the function, traditional in New England came into full glory again.

Over 300 attended and fun and relaxation was the order of the day.

About 2 P.M. a spirited 7 inning softball game got under way between the Logozzo Wildcats and the Sanders Tigers. On a close play at home, the Logozzo Wildcats pulled the winning run out of the fire.

Dozens of games of every kind and description were supplied. The trap shooters on the hill gave an Anzio Beachhead atmosphere to the afternoon. Doc Kellner, famed exponent of the boomerang demonstrated how the device was thrown but no one could figure out how to get the thing to come back.

Al Crane demonstrated his ability with the bow and arrow. Who is this guy Robinhood anyhow?

Many of the boys restricted their exercise to pulling in good poker pots all afternoon and late into the evening.

Fresh air and exercise developed robust appetites and lusty thirsts. There was plenty to take care of both requirements. Under the onslaught some 800 hamburgers; 700 hot-dogs, 7 bushels of steamed clams, 5 bushels of onions, 7 gallons of coffee, and pile upon pile of tasty food melted away.

Everybody missed Bob Leather who was in the hospital and could not attend. In his absence other members of the Lea organization did a top flight job of "hosting." Thanks Lea . . . for a perfectly grand party.

THE FOUR "MACS" OF FORMAX

NEW Equipment Materials Supplies

CLEANER CHASES ROACHES

Any manufacturer will wear a wide smile when he finds new uses for an old product.

Recently, Wyandotte Chemicals Corporation, Wyandotte, Mich., hit upon the happy fact that its popular and outstanding cleaner, Wyandotte F-100, was not only doing a grand job in cleaning paintwork, floors and toilets but was also scaring the daylights out of *Blatella germanica* (Hitler in the sugar bowl), or, in plain English, the common cockroach.

Wyandotte F-100 contains pine oil. Roaches seem allergic to that pleasing but penetrating disinfectant. The moment papa and mamma cockroach get one whiff of it, they wave their whiskers wildly, ride herd on their offspring and emigrate pronto to dirtier and kindlier climes.

Deaths from toxic compounds, mistaken for table salt, have become so frequent that a change to the safe, pine-scented Wyandotte F-100 seems indicated wherever food is served and cleanliness is a virtue.

DURALON
a new basic resin

The U. S. Stoneware Co., Akron, Ohio, announce DURALON a new basic resin having a combination of properties unique among organic resins. Duralon is insoluable in any of present-day solvents has virtually zero water absorption, stability in storage and ease of workability.

Full possibilities of Duralon have not been explored but preliminary tests plus background of several years research indicate the following applications:

As a casting material, with or without various fillers for oil, water, and solvent-resistant mechanical, electrical parts readily machined from cast sheets or rods.

As a protective coating for furniture, table tops, equipment to hot solvent fumes or excessive moisture.

As a bonding agent for friction or anti-friction materials, abrasives powdered metals, etc.

U. S. Stoneware chemists have been intrigued for some time with the possibilities of this material but only recently have found an effective means of controlling reaction and manufacturing stability.

NEW

Something NEW in diamond wheels —the ZURIUM bonding process for locking diamonds firmly and securely in the wheel—is announced by Industrial Abrasives, Inc. of Chicago.

Following a long period of research and study, Industrial Abrasives state that the new bonding principle has been perfected by the use of ZURIUM which has already proven successful in the Super Cut Diamond Wheels.

Reports by the company indicate unusually long life for these wheels. Under ordinary care in operation, the new Super Cut ZURIUM bonded wheels are said by W. B. Muse, Sales Manager, to hold up under the toughest applications on carbide tool grinding and finishing. Each wheel, Muse states, is capable of grinding several thousand carbide tools, thus cutting time costs, and speeding production.

A Question and Answer brochure on diamonds in industry is free on request. Write: Industrial Abrasives, Inc., 3724 West 38th St., Chicago, Ill.

UDYLITE PRESENTS NEW, FULLY AUTOMATIC PLATING MACHINE

After a thorough survey of the industry, the Udylite Corporation discov-

ered that over 80% of all parts electroplated could be handled more efficiently and economically on a fully automatic plating machine. The survey also disclosed that the most workable size for such a machine, to be used in the average plant would be 35′ x 6′ x 9′.

With this in mind the Udylite engineers have developed a "packaged" full automatic plater which could be sold as a complete unit, shipped in assembled condition in one freight car and easily installed by the buyer's own men, upon arrival.

The Udylite Full Automatic is *new* only as a unit. Its operating principles and various mechanisms have been in use on some of the company's finest equipment, for many years.

A new square type space saving transfer system was worked out which not only requires less space but permits a wide variation of transfer speeds—lift, transfer and lowering rate being variable, independently. Racks are spaced on 18″ centers but this may be varied, at will, without readjustment of the transfer mechanism.

Operating principle is very simple and the unit has few moving parts, greatly reducing maintenance and operating expense.

A single row carrier system avoids crowding and burning on turns with greater ease of load and unload. Handles up to 76 racks per hour, variable to work requirements.

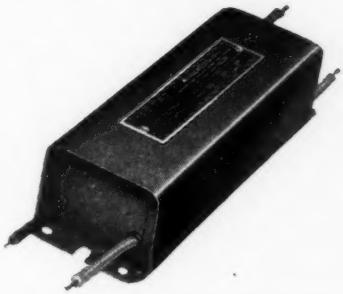
Heavy duty, copper anode and cathode rods afford positive self-aligning hook contact.

A single, hydraulic mechanism provides smooth, positive transfer. Electric arc welded steel superstructure is carefully counterbalanced so that transfer mechanism lifts only weight of eight loaded racks at one time.

Production line economies have brought cost within the reach of practically any metal finishing shop. Compact size and easy movability makes it a natural for use as part of the regular production line, saving many hours of lost "handling" time in trucking parts to a central plating installation.

The compactness and economy of these full automatics also encourage their use in multiple units or batteries to meet exact job requirements. Quick convertibility to new jobs, individually, after the need of a battery no longer exists, is another feature.

NEW QUICK-START BALLAST FOR INSTANT STARTING FLUORESCENT LAMPS



The one disadvantage of fluorescent lighting has now been overcome. Time-lag between snapping of the switch and lighting of the lamp is now a thing of the past. The new Quick-Start fluorescent ballast announced by The Acme Electric & Mfg. Co. of Cuba, N. Y., for use with "Instant Start" fluorescent lamps, eliminates the need for starters and provides for instantaneous lamp light. Now available in dual 40 watt size for two-40 watt lamps, in either end-lead or bottom-lead designs. Operates from standard 115/120 primary circuit it boosts the voltage to approximately 450 volts for lamp starting. It is claimed that when used in connection with the new "Instant Start" fluorescent lamps—no sacrifice is made in the accustomed operating advantages or lamp life. However, if used for other than "Instant Start" type lamps, lamp life is variably reduced. Old type fixtures may be changed to "Quick Start" by replacing old type ballasts with this new Acme Quick-Start design, and installing the new "Instant Start" type fluorescent lamps.

ELECTROPLATING COMPUTER

A new and wholly original aid to the electroplater and plating chemist has been made available by the Hanson-Van Winkle-Munning Co. This instrument is called the Jernstedt Electroplating Computer. It does for the plater what the slide rule accomplished for the engineer—makes use of logarithmic scales to eliminate lengthy calculations. Ac-

curacy of control and a minimum loss of time are the results, after the plater becomes familiar with its operation.

The instrument accomplishes the following:

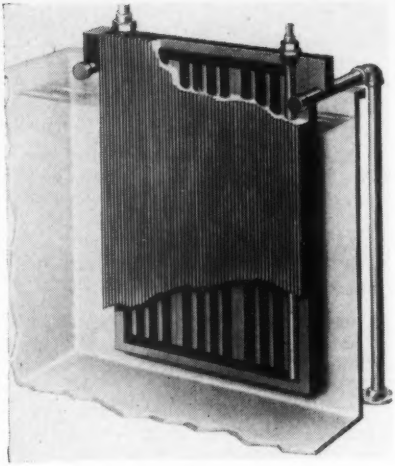
1. Computes chemical additions required in a plating bath of any gallonage, including cyanide additions.
2. Indicates weight of metal deposited on unit area given the thickness. Metal costs can be quickly determined.
3. Lists usual cathode efficiencies of all modern electroplating solutions.
4. Gives plating time required to deposit a given thickness of any metal.
5. Computes current density required to produce a deposit of given thickness.
6. Indicates thickness of deposit resulting from an established plating time at a known current density.
7. Space is provided for recording the standard composition of 20 different plating solutions. The normal temperature of operation and gallonage of each solution can also be recorded.
8. Lists component parts, in percent by weight, of salts commonly used in electroplating.
9. Lists commonly used metric conversion equivalents.

Full instructions and details of the operation of the electroplating computer are available on request.

PLATING RACK INSULATION

Wrap-Rax a tape for insulation plating racks and for use as a stop-off is fully described in Bulletin WR-102 of the Hanson-Van Winkle-Munning Co., Matawan, N. J. This material is a synthetic thermoplastic resin in tape form which possesses a high resistance to abrasion and wear and excellent dielectric properties. It is non-blistering even at high temperatures and high current densities when properly applied. It resists chemically all cleaning pickling and plating solutions. It does not take a plate.

Wrap-Rax can be used for repairing and patching old racks. It requires no handling of cans or drums of liquid, no dipping tanks, and gives off no toxic or inflammable fumes. It is furnished in rolls of approximately 250 lineal feet, from ¾" up to 6 or 8" wide.



NATIONAL CARBON DEVELOPS "KARBATE"

The National Carbon Company, Inc., has developed a compact and sturdy new type of corrosion resistant "Karbate" heat exchanger to meet the need for a chemically inert, mechanically strong heating (or cooling) unit for use in pickling tanks and other metallurgical applications. The "Karbate" material from which the heater is made is an impregnated graphite impervious to liquids under high pressures; it possesses high heat transfer values and is resistant to practically all acids, alkalis and solvents.

The exchangers are of plate type, employing the principle of extended, or corrugated, surface to attain maximum heat transfer area without bulkiness. Installation requirements and economical manufacturing methods caused National Carbon Company to adopt four standard design groups incorporating both parallel and series flow channels, thus making possible 30 different combinations to meet the widest range of heating and cooling requirements.

Small and interchangeable, the units are designed so that they can be readily adapted to various sizes of tanks, they can be mounted in multiple or single units and need little space in the tank.

Some two hundred of the heat exchangers are now in service and producing excellent results. From the tests conducted on those heat exchangers in operation, the following two engineering

reports may be regarded as typical. Installation number I was of two 10″ wide x 4″ thick x 36″ long plate heaters placed in one end of a non-agitated wooden tank 60″ long x 36¼″ wide containing 50 cubic feet (3,120 lbs.) of 1.1% HF and 6.0% HNO_3. The acid liquor was heated from 46.3°F. to 167.0°F. in one hour using 26 p.s.i. gauge steam. The overall coefficient of heat transfer was about 150 B.T.U./sq. ft./°F./hr. Immersed area of the heaters was 14.0 square feet.

In number 2 installation, a single heater 94″ long was placed in one corner of a tank 96″ long x 48″ wide x 96″ deep containing 560 gallons of 35% HCL and 1140 gallons of water. Operated at 30 p.s.i. steam, thermostatically controlled, the heater required two hours to raise the temperature of the bath from room temperature to 175°F. for an overall heat transfer of about 165.

These two examples illustrate the efficiency of the "Karbate" heaters. In certain pickling and plating applications, the heaters, due to their inertness and extremely high heat transfer characteristics, have replaced steam spargers which introduce steam directly into the bath itself for heating purposes. In these processes where spargers have been replaced with the "Karbate" heaters, the problem of acid dilution from condensing steam has been avoided.

Major features of the heat exchanger, however, are its corrosion resistance and mechanical strength, which mean the widest application where corrosive conditions and mechanical shock are inherent to the process. Designed to meet precisely these conditions, the "Karbate" heat exchangers are maintenance free and give a much greater life service than other types of heating units.

CAMEL APPOINTED DETREX ALKALI SALES MANAGER

The promotion of Leroy Camel, Cleveland, to Sales Manager of the Alkali Division has been announced by W. W. Davidson, Vice President in Charge of Sales of Detrex Corporation, Detroit 27, Michigan. Mr. Camel was previously manager of the Eastern section of the Alkali Division with offices in Cleveland, Ohio.

The continued expansion of business in this division has brought about the necessity for a larger sales organization. Mr. Camel brings to his new headquarters in Detroit wide field, laboratory, sales and service experience in the cleaning industry.

The promotions of Joel Cooper, Detroit, and Herman Grosser, Cleveland, as Division Managers in their respective territories were also announced.

In addition to a complete line of Triad Alkali and Emulsion Cleaners, strippers and spray booth compounds, Detrex Corporation manufactures Alkali Washers, Solvent degreasers and Perm-A-Clor and Triad degreasing solvents.

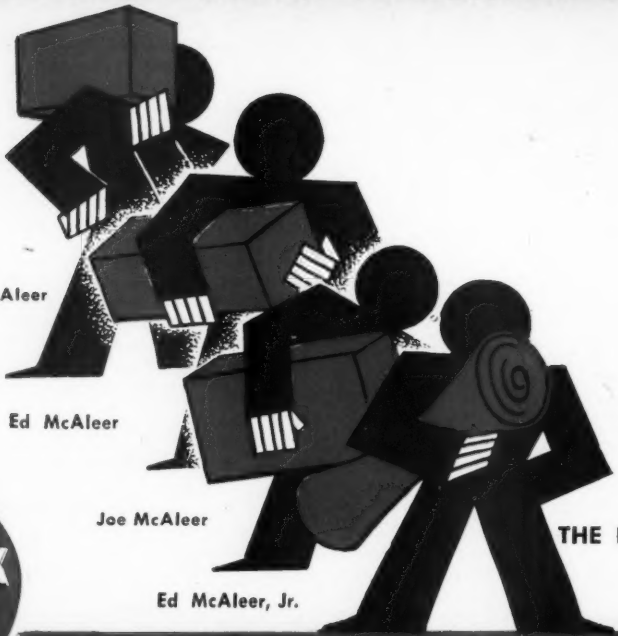
BAREL-CEL

The demand for a small compact barrel plating unit has been met by the Precimet Laboratories, 64 Fulton Street, New York City. They have recently put on the market a two gallon barrel plating unit "Barel-Cel" which although originally designed for the plating of precious metal, is also being used satisfactorily in copper, nickel, brass, silver plating, etc.

The Barel-Cel is simply constructed: it consists of adjustable cathode and anode, a tilted tub which rotates slowly during the plating operation. The power unit electric motor can be plugged into any convenient outlet, no special wiring is necessary. The plating current supply to the unit is furnished by means of two wire leads that are fastened to the plating current bars. A special feature of the construction is the tub which is removable to permit flexibility in handling the solution, such as raising to the proper temperature, etc. before plating.

The Barel-Cel is particularly suited to the plating of such small pieces as springs, catches, rings, ear wires, pins, screws, etc. There is no waste of materials such as occurs in the basket method of plating. Several plating houses doing government work, have found the unit a time and labor saving device. Perhaps its outstanding advantage is its size, which is unique in the field of barrel plating.

Pamphlets with further information may be obtained by writing to Precimet Laboratories, 64 Fulton, New York 7, New York, Division of George C. Lambros.



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THE FOUR MACS

A Complete Line of
Buffing Compounds, Polishing Wheel Cements, Tampico Burring Compound, Greaseless Buffing Compounds and Emery Paste . . . also every type of Buffing and Polishing Wheels, including Soft Rubber Polishing Wheels, Tampico Brushes and Wire Wheels.

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Is Carefully Engineered for the Cleaning and Finishing Job for Which It Is to Be Used.

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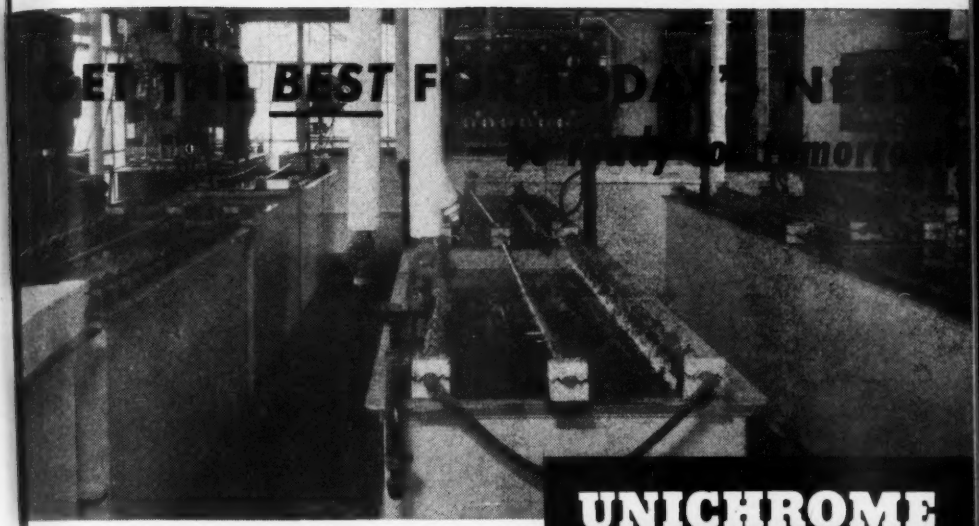

UNICHROME *Alkaline Copper* PLATING

TODAY, when it counts the most, Unichrome Alkaline Copper lends a hand to America's war-vital industries — helping set new records for speed, efficiency, smoothness of deposits and safety of operation. Tomorrow, these benefits will pay handsome dividends in the switch to *civilian application.*

IF COPPER PLATING is a problem to you now . . . or, if copper plating will play an important role in your post-war manufacturing plans . . . check up on these features that make new Unichrome Alkaline Copper *the process* for plants that want the best!

THICK, LUSTROUS DEPOSITS — Copper can be deposited quickly and easily to required thicknesses. And the exceptional smoothness of the deposit provides a perfect base for bright nickel *without polishing or buffing*. However, if the base metal lacks a sufficient degree of polish, the plate can be buffed with *minimum* pressure — effects savings in time and buffing materials.

SAVING PRODUCTION TIME — It is now possible to produce a .001" deposit of copper plate in less than 20 minutes — greatly increasing output per unit of equipment. The deposit is "active" — free from scum — and requires no additional treatment for subsequent plating. A standard cleaning cycle is employed.

NO SPECIAL EQUIPMENT — The Unichrome Alkaline Copper process is suitable for all types of equipment — including still tanks, automatic and semi-automatic conveyors, and barrels. The solution is non-toxic; does not attack clothing or equipment. *It contains no cyanide*, releases no objectionable or injurious fumes, and does not require ventilation. Brighteners, wetting agents or special addition agents are not needed.

IMPORTANT SAVINGS — The bath is stable and has a wide operating range and uses moderate temperatures — 100° to 140°F. This makes possible important savings in heating requirements and heat losses. Throwing power is excellent — with anode and cathode efficiencies at 100%. Replenishment cost is low because solution is free-rinsing and does not deteriorate or build up with carbonate. Bath is much less severe on rack coatings and stop-off materials than highly alkaline, high temperature solutions.

GET THE FACTS — Thousands of hours of operation, plating a variety of products under widely differing operation conditions have *tested* and *proved* the reliability of the Unichrome Alkaline Copper process. Write today for your free copy of our 6-page leaflet that tells *all* the advantages of this unique, new process. A brief outline of your requirements will assist us in replying promptly.

OTHER U.C. PRODUCTS AND PROCESSES TO SERVE YOU

CHROMIUM PLATING for wear-resisting, oil-retaining and other types of finishes.

☆**ANOZINC** for anodic treatment of zinc giving greatly increased corrosion-resistance and an attractive black or yellow finish.

☆**UNICHROME ALKALINE ZINC** for smooth, lustrous zinc plating in a non-cyanide bath.

☆**UNICHROME ALKALINE STRIP BATH** for speedy removal of copper, chromium, zinc, etc., from steel and cast iron without etching the base.

☆**UNICHROME RACK COATINGS** specially formulated to stand up under the most severe operating cycles.

☆**UNICHROME STOP-OFF LACQUERS AND COMPOUNDS** specially formulated to meet specific plating problems.

☆**UNICHROME CLEAR LACQUERS** specially formulated to meet specific finishing requirements.

☆**UCILON** — a corrosion-resistant material for protecting surfaces against acids, alkalies, water, gasoline and various corrosive chemicals.

☆Trade Mark Reg. U. S. Pat. Off.

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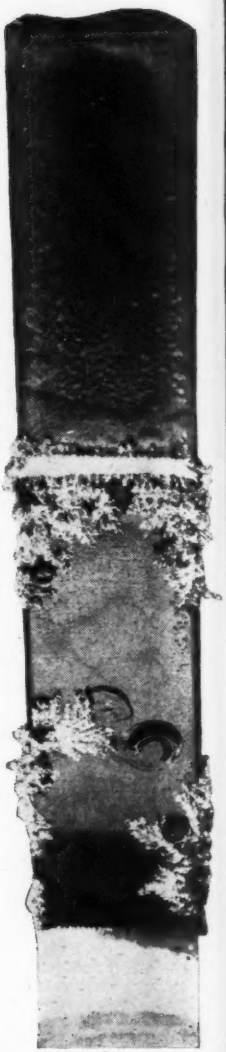
Waterbury 90, Conn. ★ Detroit 7, Mich.

Compare

THE PROTECTIVE QUALITIES OF MICCROME WITH THOSE *of the* AVERAGE MASKING LACQUERS



Miccrome is a new lacquer developed especially for masking parts for hard chrome plating. As evidence of its excellent adhesion, good dielectric strength, and other unexcelled protective qualities, two coats of Miccrome and two coats of another masking lacquer—one that is well-known and has been widely used—were applied on the bar shown at the right. After 15 hours of immersion in the solution, the Miccrome coating pictured at the top of the bar showed almost no change. Shown below it in this unretouched photograph is the portion coated with the other lacquer.

Other features of Miccrome are these: It is simple to apply and is unusually easy to remove. It is very fast air drying. It can always be trimmed cleanly. Three colors—red, blue and green—provide good contrast to exposed surfaces and offer a quick means of identification of work in production.

Full information is yours for the asking.

MICCROME

Developed and Manufactured by Experienced Platers

MICHIGAN CHROME & CHEMICAL CO.
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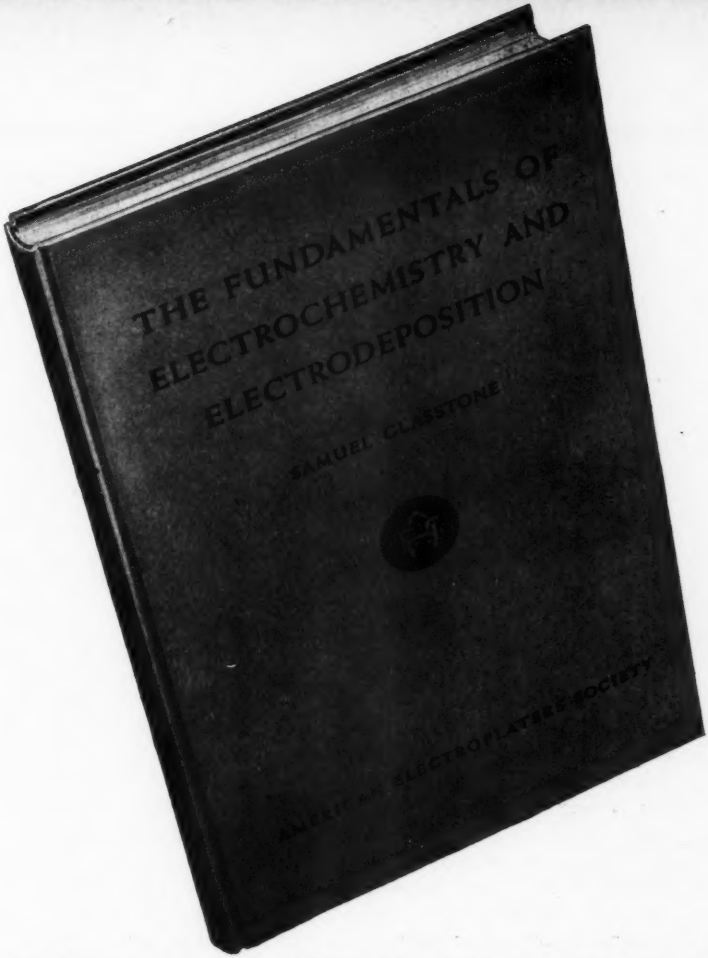

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This Can Be Prevented — And So Can Corrosion Failures

Corrosion failures are seldom as violent as this, but they are equally disconcerting. What is more to the point, corrosion can be checked and prevented even while many of the popular corrosion resisting metals are being diverted to war production. The Storts lead fabricating and lead lining department is helping scores of plants to defeat corrosion during the emergency. Lead is readily obtainable and when expertly fabricated it does a marvelous job of protecting tanks, fittings, and accessory equipment. We recommend it for most applications where corrosion conditions are severe. When your favorite alloys are released again for this use, Storts will have them for you.

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BRANCH NEWS

Business and Social News • Educational Activities

JACKSON-LANSING BRANCH

The first annual educational session and dinner dance was held at the Hotel Hayes on May 13, 1944. Approximately 150 were present at the educational session in the afternoon and over 300 enjoyed the dinner, floor show, and dance in the evening.

The dinner, entertainment and dance concluded a one-day educational-social function of the society. Arrangements for the event were made by a committee headed by William H. Webb as general chairman.

The educational phase of the conference opened at 2 p.m. and was featured by discussions by three plating authorities.

Howard H. Blouch of Detroit, representative of the electroplating division of the DuPont Co., spoke on the subject "High Speed Copper Plating with New All-Potassium Bath;" Dr. Haig Solakian, vice president and research director of the A. F. Holden Co. of New Haven, Conn., discussed "Various Types of Salt Baths and the Heat Treatment of All Kinds of Metals," and Ralph E. Pettit of New Kensington, Pa., representing the Aluminum Corporation of America, spoke on the subject, "The Finish Is Always in Sight."

Chairman of the afternoon education meeting was Dr. R. B. Saltsonstall of Detroit, research director of the Udylite Corp.

The registration included electroplaters, chemists, metallurgists, production engineers, production control engineers, process engineers, and purchasing agents, connected with many industries throughout cities in Michigan and Ohio.

C. E. TOPPING, *Sec'y-Treas.*

BUFFALO BRANCH

Our regular May meeting was held in parlor B of Hotel Statler, May 12. President Logan took the chair and called the meeting to order at 8:30 P.M. All officers and members of the Board were present.

The minutes of the April meeting were read and approved. The bills for the month were read and ordered paid. After the reading of the Treasurer's report, Dr. Wernlund moved that it be accepted and placed on file. This was seconded by Ralph Gipp and carried.

The report of the nominating committee, listing their candidates for the offices of the Branch, was read. The nomination of Dr. Wernlund for the office of President was proposed by Bert Kirchoff and seconded by Ralph Gipp. The official ballot gave a majority to President Logan, candidate for reelection. A motion by Bert Kirchoff, seconded by Leon Nowak and carried, provided for the closing of nominations and instructed the Secretary to cast one ballot for the remaining candidates.

The currently elected officers are:

President—Charles W. Logan
1st Vice—Dr. C. J. Wernlund
2nd Vice—Donald Rice
Secretary—James C. Mays
Treasurer—Frank S. Nowakowski
Librarian—John Rooney
Sgt. at Arms—James A. Moneypenny
Board of Managers—Chairman Joseph Ruff, Seibert Johnson, Anthony Nigro.

The following were elected to represent the Buffalo Branch at the Annual National Conference:

Delegates—William Hart, Charles Logan, Joseph Ruff.

Alternates—Donald Rice, Ralph Gipp, John Logan.

The meeting was adjourned at 10:45 P.M.

J. C. MAYS, *Sec'y*

WATERBURY BRANCH

Waterbury Branch held its May meeting Friday, May 12, 1944 at the Hotel Elton. Dinner at 6:30 in the Colonial Room was followed by the technical session and business meeting at 8:00 P.M. We were very pleased to have an out of town guest in the person of Arthur McNeil, President of the Bridgeport Branch, who spoke briefly about the Regional Meeting.

This being the final meeting of the session, the officers were asked to report on their activities during the year. Tony Maz spoke of the cooperation among the members and officers which resulted in a very successful year and stressed the need for continuing our efforts to make the coming year still better. Wes Cassell reviewed the membership and reported we had made a net increase of 5.7%. Bill Starr summarized his reports on priorities and Earl Couch discussed the program for the year, while George Dubpernell covered the books reviewed. Spencer Henn gave the financial statement for the year which showed a satisfactory balance on the credit side of the ledger.

Bill Gray, chairman of the nominating committee offered the names of the following men as officers for the coming year: President, A. J. Maz; Vice-President, W. L. Cassell; 2nd Vice-President, Warren Jacquiry; Librarian, E. W. Couch; Secretary and Treasurer, S. L. Henn; Asst. Secretary, A. W. Tracy; Board of Managers, Ralph Colter, E. T. Candee, C. A. Kilborn. As delegates to the National Convention, A. J. Maz, E. T. Candee, Wm. Coleman and as alternates, Joseph McConas, Maurice Henry and C. A. Kilborn. These names were offered in nomination and as there were no further nominations the secretary was instructed to cast one ballot electing the nominees.

Earle Couch reported on his trip with Ellsworth Candee to Groton, to inspect the facilities of the Hotel Griswold as a possible place to hold the National Convention. In normal times this would evidently be an ideal spot for the convention, but at present it is doubtful if its housing facilities could be supplemented by the nearby hotels, which are now crowded with army and navy personnel, therefore the meeting voted not to ask for the convention at this time.

Henry Strow reported that our collection of badges, programs, and relics of Waterbury manufacture would be ready and would make an interesting exhibit at the convention.

The business of the evening being completed, Donald Hilliard as technical chairman continued the program, first introducing George Dubpernell. George reviewed the new English book by Samuel Field, "The Principles of Electrodeposition." This book is very readable and excellent for anyone wishing to get the theory of electrodeposition. However, some of the newer theory has not been included, so that it does not quite fill present needs.

Bill Starr reviewed the situation on metals for plating. The system for obtaining these materials and for obtaining operating supplies has been simplified and is now working smoothly and reasonably satisfactory.

Our movies were a presentation of the Dow Chemical Co., entitled "Magnesium Metal from the Sea." They showed the plant and the methods used for extracting this very light and useful metal from sea water.

J. A. Lee was the speaker of the evening and Don Hilliard introducing him, noted that he had been with General Electric Co. for fifteen years working with rectifiers.

Mr. Lee discussed, "Newer Developments in the Application of Rectifiers to Electroplating," covering particularly the use of the copper oxide rectifier in anodizing. The formal part of the talk was brief and developed into a general discussion covering the merits and limitations and applications of rectifiers to electroplating. At 10:45 Mr. Lee was given a rising vote of thanks for the able manner in which he increased our understanding of this important piece of equipment.

In concluding the meeting our retiring President, Carl Kilborn expressed his appreciation for the close cooperation he had received throughout the year from the whole membership. Tony Maz, our new President closing the meeting expressed his desire that this close understanding and fellowship would continue to the betterment of the Branch.

SPENCER L. HENN, *Sec'y-Treas.*

PITTSBURGH BRANCH

The last regular meeting of the Pittsburgh Branch this spring was held Thursday, May 11th, at the Fort Pitt Hotel.

Dinner was served at 6:40 P.M. with 31 present. At 8:00 P.M. President Saylor introduced Mr. T. G. Timby of the Jones and Laughlin Steel Corporation who spoke on "Electrotinning of Strip in the Alkaline Bath." Several slides were shown in connection with the talk.

The electrotin strip lines have increased from three to twenty-nine lines in the past two years. This increase was made in record time with a minimum of experience. At present over 3000 miles of electroplated tin strip can be pro-

duced every day. There are electrotin lines using the potassium stannate, sodium stannate, stannous sulphate, and stannous chloride solutions. Each have their particular advantages and are working satisfactorily.

The potassium stannate bath operates very similarly to the sodium stannate bath, using soluble anodes in the polarized conditions. The anodes are polarized immediately by applying sufficient voltage to produce 100% overload of current. The anodes are polarized with the yellow-green film in 10-30 seconds and the current is brought back to normal. If the anode current density is too high a brown-black film insulates the anode and makes it passive. Anode and cathode efficiencies drop appreciably with increasing current densities but are increased with increasing temperatures. In practice, a temperature of 190-200° F. and current density of 30-40 amperes per square foot are found best.

Following the discussion on Mr. Timby's talk, Mr. Shaffer of the Pittsburgh Convention Bureau spoke on possibilities of holding the 1945 AES convention in Pittsburgh. After detailed discussion it was voted for the delegates to invite the 1945 convention to Pittsburgh.

Election of officers for 1944-1945 year was held with the following results:

President—S. S. Johnson.
1st Vice Pres.—W. J. Hennessy.
2nd Vice Pres.—R. A. Dimon.
Librarian—R. A. Dimon.
Sec'y.—Treas.—F. R. Keller.
Board of Managers—H. F. Saylor, L. J. Schmitt, L. E. Lancy.

FRANK R. KELLER, *Sec'y-Treas.*

ROCHESTER BRANCH

The monthly meeting of the Rochester Branch was held on Friday, May 12th, 1944 at the Hotel Seneca.

President John Q. Adams opened the session at 8:30 P.M. The minutes and treasury report of the previous session were read and approved.

The secretary was awarded $26.96 for services rendered at our spring banquet of March 11th, 1944.

The following delegates were elected to the National Convention: Mr. S. P. Gartland, Mr. William Tucker, and Mr. Donald Blum. The alternates are: Mr. Albert Cameron, Mr. Eli Beaudry, and Mr. Michael Pulvino.

Due to the absence of our Educational Chairman, President John Q. Adams introduced Mr. Fred Hampson of the Industrial Chromium Corporation. Mr. Hampson demonstrated the "Electronic Tank Controller." His set up included miniature plating and drag-out tanks, completely controlled by his ingenious outfit. This particular unit controls temperature, solution levels, and signals an alarm if the tank or tanks should spring a leak, and has many other applications for any plating department.

The speaker was given a rising vote of thanks.

President John Q. Adams adjourned the meeting at 10:30.

DONALD C. BLUM, *Sec'y*

CHICAGO BRANCH

The regular monthly meeting of Chicago Branch was held Friday, May 12th at the Atlantic Hotel.

President R. J. Hazucha presiding and all other officers present.

The yearly financial report was read and accepted, also the reports of the Membership committee and the Educational committee read and all these accepted and placed on file.

Mr. W. C. Radunz was transferred from Detroit to Chicago branch. We were very happy to have Lt. L. A. Davies with us at this meeting. Mr. Davies formerly was the Chicago Manager for the Udylite Co. before joining the Navy and at present will be stationed in the Chicago Area, after serving as Naval Material Insp. at several Western States.

President R. J. Hazucha asked Mr. Frank Hanlon to install the new officers. Frank made a very fine interesting job of installing these officers and impressed each officer with the importance of his new duties.

Our Librarian, Mr. Krentel, introduced the guest speaker of the evening, Mr. J. S. Hicok of the Promat Division of Poor & Co. of Waukegan, Ill., who made a very interesting and instructive talk on the use of "Superimposed Alternating upon Direct Current in the Electrodeposition of Metals." Mr. Hicok answered the many questions asked by those present and displayed many very fine samples plated by this process. The following questions were found in the question box:

#1. What strip is used for bronze plate on steel. *Answer.* 8 oz. Sodium Cyanide, 4 oz. Caustic per gal. with reverse current. It was also suggested that you might try a strip of 3 lbs. Sodium Nitrate per gal. with reverse current.

#2. What dip can be used to remove a deposit of Calcium Stearate prior to plating, basis metal is brass. *Answer.*

After some discussion it was suggested that a solution of 12 to 16 oz. of Caustic near boiling with direct current might solve this problem.

#3. How is activate carbon used and how long does it last? *Answer.* This carbon should be used in the filter and the Dow Chemical Co. issues a pamphlet on the proper way to use activate carbon.

There were 97 present at this meeting which adjourned at 10 P.M. after which refreshments were served.

J. W. HANLON, *Sec'y*

LOS ANGELES BRANCH

The regular monthly meeting of the Los Angeles Branch was held May 8th at the Rosslyn Hotel.

Thirty-eight members were present. No visitors.

The meeting was turned over to Earl Coffin, Librarian, who introduced Mr. John Neerhout of the Rheem Corp. Mr. Neerhout gave a very interesting talk on iridite.

Earl Coffin acted as Installing Officer, installing J. Sunderhaus as president, E. W. Wells, 1st Vice President, D. N. Eldered, 2nd Vice President, Frank Bunker, Sec. and Treas., Earl Coffin, Librarian, E. Lamoureux, Howard Woodward and E. R. Holman, Board of Managers.

In behalf of the Branch, E. Lamoureux presented the Retiring President, E. R. Holman with a gift of appreciation.

In the absence of Frank Bunker, Sec., who was east on business, C. C. Mclaren acted as Sec.

Minutes and financial reports were read and approved. Bills ordered paid.

Motion was made and carried that the Sec. acquire certificates of membership for each member.

E. Lamoureux read the proposed amendments which were voted on by the members.

Delegates were given instructions.

Carl Dennis was reported ill.

Bruno Schlinder left for Pittsburgh, sending his regards to all the boys.

It was reported that a former member, Ed Cushing passed away. He had been active in plating of plastics.

It was also reported that J. R. De Laney is in the Armed forces.

Meeting adjourned 10:30.

C. C. MCLAREN, *Sec'y*

PITTSBURGH BRANCH

The annual social meeting of the Pittsburgh Branch was held Thursday, April 13th, at the Fort Pitt Hotel. There were 77 present which is the largest attendance we have had at any of the social meetings.

The Suppliers Club of the Pittsburgh Branch furnished a cocktail party from 6:00 to 7:00 P.M. after which dinner was served. The entertainment for the evening was supplied by Mr. Muddiman of Carnegie Illinois Steel Company who performed magician tricks of a professional quality, and Mr. H. F. Saylor, our President, who played several selections on the violin. Before becoming an electroplater, Mr. Saylor was on tour in Europe and this country with a symphony orchestra. Following the violin selections, we were interrupted by a blackout. Following the blackout there was dancing for the rest of the evening.

The last meeting this spring will be held May 11th, at the Fort Pitt Hotel. Mr. Timby of the Jones and Laughlin Steel Company will speak on "Electrolytic strip tin from the alkaline bath."

FRANK R. KELLER

PHILADELPHIA BRANCH

Philadelphia Branch held its April meeting with President Verrell in the chair.

Librarian Orlik introduced the speaker of the evening, Dr. R. B. Saltonstall, Technical Director of the Udylite Corp. of Detroit, Mich., who spoke on "Bright Nickel."

Dr. Saltonstall spoke from a rather different angle, the advantages and disadvantages of the use of the different brighteners used in the various proprietary solutions.

The speaker's lecture was well and interesting even though there is practically no bright nickel being plated. There were many questions and they, in turn, were well answered.

Dr. Saltonstall receive an enthusiastic vote of thanks from the more than 55 members present.

The minutes of the previous meeting and the officers meeting were approved as read.

The applications of Louis Sherman, active, Herbert E. Ricks, active, and E. J. Zurbach Sr., active, were referred to the Board of Managers.

After approval by the Board of Managers Wm. H. McCall, Jr., active, E. J. Zurbach Sr., active, and Robert A. Chilcott, associate, were elected to membership.

The Los Angeles Branch letter was laid aside for a further reading at the May meeting.

The Branch endorsed the Newark Branch amendment to the By-Laws.

The Montreal Branch amendments were ordered received and filed.

A further letter from 3rd Vice President W. L. Pinner was ordered received and filed. Some interest was shown.

The following officers were nominated and elected:

President—E. J. Zurbach, Jr.
1st Vice Pres.—Henry G. Orlik.
2nd Vice Pres.—L. T. Burden.
Treasurer—G. M. Long.
Secretary—Paul Mentzer, Sr.
Librarian—Albert Hirsch.

Board of Managers—George Gehling, Joseph Underwood, Nat Verrell.

Delegates—Henry G. Orlik, Nat Verrell. Paul Mentzer, Sr.

Alternates—R. E. Jackson, Jr., Joseph Underwood, W. A. Bantle.

The Board of Managers were requested to audit the books. The bills were ordered paid after a most interesting meeting.

PAUL MENTZER, *Sec'y*

LANCASTER BRANCH

The Lancaster Branch of the A.E.S. met May 12 at the Brenemen Building. The following nominations were presented by the nominating committee:

President—R. L. Hoenstine.
Vice Pres.—D. W. Flening.
Sec. & Treas.—W. H. Fordney.
Librarian—H. L. Hovis.

Board of Managers—Clay Brubaker, C. Snyder, H. E. Kilheffer.

There being no more nominations the secretary was instructed to cast a ballot electing those nominated.

The following applications were received:

Robert Owen, 844 Highland Ave., Lancaster, Pa. and John C. Mylin, 3rd, Mountville, Pa.

The following delegates and alternates were appointed for the convention:

Delegates—L. A. Critchfield, R. L. Hoenstine, J. E. Butson.

Alternates—T. R. Schwalm, K. McMillen, H. L. Hovis.

On motion made and seconded the delegates were instructed to use their own discretion on voting on the various amendments proposed.

After the business meeting a social party was held. Bowling, cards and refreshments were served. The social part of the evening was contributed by Chris Brubaker and Mr. W. A. Reynolds. There were 40 members and guests present. A good time was had by all.

WILLIAM H. FORDNEY, *Sec'y*

WATERBURY BRANCH

Waterbury Branch held their regular meeting, Friday, April 14, at the Hotel Elton. Dinner was served as usual in the Colonial Room at 6:30 P.M. At 8:00 Tony Maz opened the technical session in the absence of President Carl Kilborn.

The principal business of the evening was the appointment of the nominating committee, consisting of Wm. Gray, Ralph Colter, and Ellsworth Candee. This committee will consider, and at the next meeting, offer in nomination officers for the coming year.

Attention is called to the business meeting which will be held April 6th at the home of E. W. Couch in Watertown. Again all who can attend are urged to do so because this is an important meeting at which the program for the coming year is formulated.

The Supreme Society has prepared certificates of membership which are offered to all members who desire them. They will be filled in and signed by the Branch Secretary and President. Everyone wishing a certificate should communicate with the secretary.

Ellsworth Candee reminded us that the Cleveland Convention is not very far away, and everyone planning to go should make their hotel reservations at once. Cards for making reservations may be obtained from the Secretary.

Emile Beloin, acting as technical chairman first introduced Jack Hyner. Jack reviewed a new book, "Toxicology and Hygiene of Industrial Solvents." This book edited by K. B. Lehmann and F. Flury has been translated from the German and it contains much material on this subject which has previously not been readily available.

Fred Foster reporting on priorities said no changes pertaining to our industry had taken place this past month. However, during the previous month orders had been issued which increased the number of items which can be nickel plated and made the situation in zinc plating much easier.

Our technical chairman's next offering was two films, the first, Battle for the Beaches, very recently released by the Navy, pictured very vividly the tremendous struggle and difficulties of any type of invasion. The second film presented by B. F. Goodrich Co. showed the making of the Alaskan Highway.

Everyone was pleased to have Walter Meyer with us and to hear his talk on "Copper Plating." Walter compared the

acid copper and cyanide copper solutions, pointing out particularly, the effect of metallic impurities on deposits from rochelle copper. He showed, too, what constituted the most favorable solution composition and operating conditions. His talk was instructing, interesting, and very practicable. A number of questions were asked and everyone expressed their appreciation for his helpful contribution.

The meeting adjourned at 10:30 P.M.

S. L. HENN, *Sec'y*

LOS ANGELES BRANCH

The regular monthly meeting of the Los Angeles Branch was held April 10th at the Rosslyn Hotel.

Stanley Rynkof, Sgt. at Arms, introduced the following visitors:

Cecil L. Wilson, Bendix Aviation.

James C. Williamson, Bendix Aviation.

H. Johnson and S. F. Peachin, of General Electric.

C. O. Graham Hard Chrome Engineering Corp.

J. W. Hanzel, Oakite Products Co.

The following applications were read, voted on and turned over to the Board of Managers:

Cecil L. Wilson of Bendix Aviation, Associate; Jack A. Cornell, San Bernadina Air Service Command, Active; Van A. Parker, San Diego Plating Works, Active; Joseph W. Hanzel, Oakite Products Inc., Associate; Grey E. Pearson, Cad. Nickel Plating Co., Active.

The following were elected to membership:

Eugene Grant De Haas, Manuel C. Sanz, Hal Cochard.

Minutes and financial reports were read and approved. Bills ordered paid.

Marcus Rynkof gave a report on the dinner dance, which netted the branch a profit of $97.00. Marcus was given a vote of thanks for his work.

It was moved and carried that a letter of thanks be written to Turco Product and Braun Corp. for the use of motion pictures and slide machine.

Mr. Carl Dennis was reported ill. Secretary was instructed to write him a letter wishing him a speedy recovery.

Our former librarian, James ApRoberts who is in the Navy is doing fine and hopes to visit with us soon.

Earl Coffin, librarian, gave us a paper by Mr. J. E. Stareck of the Chrome Corp. on anozinc and also had some samples of the work.

Bob Gripp of Cad. Nickle and Roy Lostutter Jr. of Hard Chrome gave a good talk and illustration of masking problems.

Three very interesting war pictures were shown. These were shown through the courtesy of Al Speser. The meeting was enjoyed by all.

Meeting adjourned 10:30.

C. C. MCLAREN, *Sec'y*

PROVIDENCE-ATTLEBORO BRANCH

The regular monthly meeting of Providence-Attleboro Branch, was conducted on Monday evening, April 17, in the Providence Biltmore.

Mr. John T. Henry, Jr., President of the branch, gave a most interesting review of the work done by the various officers and members of the membership committee in building up and otherwise greatly improving the branch during the past months.

Mr. Henry then presented the speaker, Mr. Ted Wiezcorek of Pape Electroplating Inc., New Britain, Conn., who spoke on Iron Plating.

Mr. Wiezcorek handled his subject in a most complete and capable manner, and it can be said that his paper was painstakingly arranged, instructive, and presented most interestingly.

A business meeting was held after the technical session, and the propositions to be brought before the Cleveland convention were discussed and passed upon by the branch members.

The selection of delegates to the above National Convention will be completed at the May meeting.

The nominating committee presented a slate of officers for the ensuing year, and this also will come up for action at the next meeting.

Visitors were present from the following branches: New York, Chicago, Boston and Springfield.

Many of our twenty-three new members were in attendance, and expressed delight with the speaker and our set-up.

Forty-eight members were present and with some timely and pleasing remarks, Mr. Henry closed the meeting at 10:45.

CHAS. C. CHACE, *Sec'y*

NEW HAVEN BRANCH

The joint business and monthly meeting of the New Haven Branch of the American Electroplaters' Society, was held on April 11th in the Hotel Taft. President Walter T. Lynch presided and opened the meeting by calling for the various committee reports.

H. T. Kellner and J. T. Sullivan, Co-chairmen of the Sixth Regional Conven-

tion advised the members of the final plans for their coming educational session and banquet.

President Lynch appointed the following Nominating Committee:

John W. English, George G. Knetch, John M. Barry, Joseph T. Sullivan, Carl S. Johnson.

George G. Knetch chairman of our membership committee handed in six membership applications.

After the business session a film entitled "Working of Magnesium" showed members typical applications of magnesium by illustrating machining, welding and other fabricating processes, also its various characteristics and properties.

Following the movie the members broke up into informal groups to discuss the present and post-war use of this metal. The meeting adjourned at 11 p.m.

B. J. GAFFNEY, *Sec'y*

The March meeting of the New Haven Branch was held at the Sterling Chemistry Laboratory of Yale University on March 7th, 1944 at 8 P.M.

President, Walter T. Lynch opened the meeting by calling on the various committees to make their reports.

George Knetch. Chairman of the Membership Committee reported nine new applications for membership.

H. T. Kellner, Chairman of the New England Regional Convention, gave a report on the plans for the annual convention to be held on April 22nd in the Hotel Taft. The committee for this affair are working very diligently to make it a success, with a broad educational session to be held in Yale Strathcona Hall, in the afternoon and dinner and dancing, with entertainment in the evening in the ballroom of the Hotel Taft.

The speaker of the evening, Dr. Carl E. Heussner, Engineering Div., Chrysler Corp., Detroit, Michigan, could not attend but had his associate, Dr. E. T. Johnson, present his paper. The lecture on "Electrodeposits As Engineering Materials" discussed old and newer engineering applications, which will be published in the *Review* in the near future. Dr. Johnson gave his listeners a broader view of the plating business from an engineering standpoint and was given a hearty vote of thanks from the members.

The meeting adjourned at 11:30 P.M.

B. J. GAFFNEY, *Sec'y*

LANCASTER BRANCH

The Lancaster Branch of the A.E.S. met this evening at Stevens Trade School. There were 29 members and visitors present. The minutes of the last meeting were read. The nominating committee presented the following nominations:

President—R. L. Hoenstine
Vice Pres.—D. W. Fleming
Sec'y & Treas.—W. H. Fordney
Librarian—H. L. Hovis
Board of Managers—Clay Brubaker, C. Snyder, H. E. Kilheffer.

A discussion was held regarding the possible election of delegates to the convention. Communications regarding the proposed change in the by-laws were read. These were tabled for discussion and action at our May meeting. Elias Smith was suspended for non-payment of dues. A discussion was held regarding an exhibit at the convention and an exhibit proposed by Mr. Schwalm was accepted and will be worked up.

After the regular business meeting Mr. H. L. Hovis introduced Mr. John Gumm of the Frederick Gumm Chemical Co. who talked to us on the subject "Electrodeposition with Superimposed Alternating Current." The subject was very interesting and was followed by an active discussion.

Mr. H. L. Hovis announced that our May meeting would be held at the Breneman Building and a social period will be held after the election and business of the evening.

The meeting was adjourned at 10 o'clock.

WILLIAM H. FORDNEY, *Sec'y*

GRAND RAPIDS BRANCH

The Grand Rapids Branch held its regular meeting March 10th in the Wolverine Room of the Rowe Hotel. The meeting started promptly at eight o'clock by the showing of the General Electric film entitled "The Art of Arc Welding."

A short business session was then conducted by our President, Homer Morton. Some discussion took place as to this Branch's purchase of a War Bond, and a committee was appointed to select the proper Bond for the Society.

Communications were read. Bob Fernekes was appointed to head the exhibit at the Cleveland Convention in June.

One application, Donald A. Paull, was presented to be voted upon in April.

Mr. R. S. Rickert of the Industrial Filter and Pump Manufacturing Company was then introduced and his paper "Modern Filtration of Electroplating

Solutions" was given, after which some discussion took place as to different methods of filtering various types of solution.

The meeting was then adjourned and lunch was served by the Hotel.

C. E. ABEL *Sec'y-Treas.*

The Grand Rapids Branch held their regular meeting in the Rowe Hotel, April 14th. The meeting started promptly at eight o'clock with the showing of a Modern Talking Picture, "On the Air." The film described the origin of radio and radio waves.

The business session was then conducted by our President, Homer Morton. Communications were read and the following committees were appointed:

Nominating Committee—Traverse Williams, Frank Joyce, Maurice Caldwell.

Convention Amendments Committee—Bob Fernekes A. Preston, Heamon Castle.

New members were then voted upon and the following elected:

Donald A. Paull, an Associate member of the Sealed Power Corporation, Muskegon.

J. A. Roberts, an Active member of the Cencast Corporation.

Three new applications were presented to be voted upon in May:

Otto A. Mix, Grand Rapids Plating Co.

John W. Pulte, Detrex Corporation.

Leonard L. Lyons, Furniture City Plating Co.

Bob Fernekes who is working on the Convention exhibit displayed the panel which he is preparing for presentation by this Branch. This display included a collection of past Convention badges and novelty metal buttons.

We were then given a talk by one of our own members, Mr. J. M. Haviland of the Haviland Products Company who illustrated his paper, "Chemistry of Metal Cleaning" by giving composition of cleaners and the purpose of the various chemicals.

The meeting was then adjourned and the popular lunch was then served by the Hotel.

C. E. ABEL, *Sec'y-Treas.*

NEWARK BRANCH

The regular meeting of the Newark Branch A.E.S. was held at the Robert Treat Hotel, Newark, N. J. on April 7th, 1944. The meeting was called to order by President William Bruhns at 8:30 P.M. All other officers were present.

The minutes of the previous meeting were read and approved. A motion was made that a check be drawn and sent to the Supreme Society covering the Per Capita Tax due.

A letter received from the Los Angeles Branch with reference to proposing one of their members, namely Mr. Marcus D. Rynkofs for nomination as Third Vice President was read. An Amendment received from the Montreal Branch was read. It was decided that both the proposal and amendment be left to the discretion of the Delegates to the Convention.

Our Librarian, Ed Washburn, introduced Mr. Edward Bucy who presented an interesting discussion on organic finishing. Mr. Bucy was given a rising vote of thanks for his talk.

The meeting was adjourned at 10:30 P.M.

GEORGE WAGNER, *Sec'y*

BRIDGEPORT BRANCH

The regular monthly meeting of the Bridgeport Branch of the American Electroplaters' Society was held Friday, April 7, 1944 at the Hotel Barnum. President A. R. McNeil opened the meeting at 8:15 P.M. with fifty-one members present including guests from the New Haven and Waterbury Branches. We were also honored with the presence of Ellsworth Candee, our Supreme Secretary and Editor, and Jack Bain, publisher of the *Monthly Review.*

A motion was made and passed to dispense with the reading of the previous meeting minutes to have time to hear Ellsworth Candee and Jack Bain give us a complete report on the progress being made on our monthly magazine and also on the changes and improvements made in the American Electroplaters' Society in general.

The following men were elected to serve as officers of the Branch for the coming year:

President—Arthur R. McNeil
1st Vice Pres.—Herman C. Braun
2nd Vice Pres.—Hubert M. Goldman
Sec'y & Treas.—Joseph G. Sterling
Librarian—Fred B. Gotthardt
Sargeant-at-Arms—
Lawrence F. Griffin

Board of Managers—Raymond J. O'Connor, William Thompson, Ben F. Kusterer.

Election of the Delegates to the National Convention to be held in Cleveland June 1944 was postponed until the May meeting.

Regional Meeting: Tickets for the Regional Meeting are to be obtained from A. R. McNeil, Chairman of the Educational Committee, who stressed the point that reservations should be made immediately, so that proper seating arrangements may be made for the banquet and the Shubert Theater. In reference to the Regional Meeting letter, the Branch voted approval with reservations made for the entry or removal of the Branches interested. This was to be decided by the delegates to the Regional Meetings, and a report is to be made at the May meeting.

Applications for Membership:

Kenneth R. Longnecker, 77 Crystal St., Stamford, Conn., Associate Member.

Alfred W. Smart, 3 Squirrel Dr., East Rockaway, N. Y., Associate Member.

Joseph J. Rivnyak, 1287 Hillside Ave., Stratford, Conn., Associate Member.

Balloting for Membership:

Ross A. Pringle, 103 Golden Hill St., Milford, Conn., Associate Member.

President McNeil called upon our 2nd Supreme Vice President, C. C. Helmle, to preside at the meeting. "Chick" as he is known to us gave an excellent talk on the progress of our society concerning new membership, and also gave a good account of himself and the details in his report. After his talk "Chick" called upon Ellsworth Candee, Executive Secretary and Editor of our Supreme Society. Candee told us of his close association with W. J. R. Kennedy and of their work together in bringing the society to its present level. Needless to say we know Candee has done a grand job. Next called by Candee was Jack Bain who was selected by the A. E. S. as publisher, to do the job and bring it up to the present level. After hearing Jack Bain talk we knew that he is the right man to take care of the job allotted to him. His reports have proved that during the past few years in the office the job has been well done. Thank you Mr. Bain for a good report and a fine talk.

The meeting was adjourned for refreshments and a good time was had by all members and guests who attended. The meeting was adjourned at 11:30 P.M.

JOSEPH G. STERLING,
Sec'y & Treas.

SPRINGFIELD BRANCH

The regular monthly meeting of the Springfield Branch A.E.S. was held at the Hotel Charles, Springfield, Mass. on March 27th at 8:00 P.M. The meeting was called to order by President Plank. The minutes of the previous meeting were read and approved.

The applications of Howard Hindes of the Washburn Co., Worcester, Mass. and William Spence, Egyptian Lacquer Co., Springfield, Mass. were read. The applicants were elected associate members.

The Secretary read a letter from the secretary of the Regional Convention Committee in which he proposed that the proceeds of the coming convention in New Haven and the following ones be deposited in a separate account and used to finance future regional meetings. The Branch voted to oppose this resolution at the coming Regional meeting. Inasmuch as the secretary will be unable to attend, Mr. Costigan agreed to be there and represent the Springfield Branch.

Mr. George Hogaboom then introduced his son, Ovid, who was the speaker of the evening, and addressed the branch on the Electrodeposition of Iron. He reviewed the early history of iron plating, solutions used and described the newer types of solutions and their advantages and limitations. The talk was well illustrated with samples of work which Mr. Hogaboom had done, and followed by an interesting question and answer period. He was given a rising vote of thanks for his interesting and timely paper.

The meeting adjourned at 10:30 P.M.

D. S. HARTSHORN, JR., *Sec'y*

BOSTON BRANCH

Boston Branch met Thursday, May 4th at the Statler Hotel, Boston with President Swift in the chair.

Minutes of the previous meeting read and approved, bills ordered paid, communications read, amendments received from Newark and Montreal branches were read and the delegates to the convention were instructed later under new business as to what the branch thought of the amendments, others were placed on file.

Pres. Swift was appointed to see the Statler Hotel about a meeting place for next fall.

A committee of two were appointed by the chair to bring in a slate of new officers at the next meeting, Arthur Mintie and Walter Larsson were named.

George P. Swift and Andrew W. Garrett will be the delegates to the convention at Cleveland, and Colgate Gilbert.

The following were elected to mem-

bership: Paul J. Topelian, Napoleon A. Vigeant, Harold F. Stevens, George Fairbairn, and Edmund W. Kindred. The following applications were read for the first time and turned over to the Board of Managers for approval: Edward J. Ellis. Boston Machine Works Co., 7-17 Willow Street, Lynn, Mass, Active and Ben Silverman, 13 Oakhurst Street, Dorchester, Mass., Active.

All business finished, Bob Magnuson our librarian held a round table discussion on the layout of a plating room. There wasn't anything that wasn't discussed from the laying of the floor solutions of all kinds and the barrels was the main spot. Some wanted to know the best barrel for their line of work and this finished the discussion. Everybody enjoyed a fine evening, thanks to all the members.

The meeting adjourned at 11 P.M.

A. W. GARRETT, *Sec'y-Treas.*

NEWARK BRANCH

The regular meeting of Newark Branch A.E.S. was held at the Robert Treat Hotel on April 21st, 1944. The meeting was called to order at 8:30 P.M. by President William Bruhns. All other officers were present.

The minutes of the previous meeting were read and approved.

Mr. George H. Bronson, Mr. Willard L. Hults were elected to Associate Membership.

Mr. Paul Oldam, Chairman of the Exhibit Committee, asked the members who intended to have an exhibit for the Convention to send all articles to him as soon as possible as he was anxious to have the exhibits forwarded to the Convention Committee no later than June 1st.

Mr. Louis Donroe announced that all the speakers had been engaged for our special meeting Saturday, April 29th at the Robert Treat Hotel. He also announced that *Metal Finishing* had circularized the Metropolitan district with notices of this meeting.

Election of officers then took place with the following results:

Robert Sizelove—President
Louis Donroe—First Vice President
John DeVries—Second Vice President
George Wagner—Secretary-Treasurer
Edward Washburn—Librarian.

Board of Managers—Horace Smith, William Bruhns and Paul Oldam.

Mr. Thomas Haddow, one of our Charter Members, had the honor of installing the officers, which he did in his usual appropriate manner. Election of Delegates and Alternates was next with the following results:

Delegates—Horace Smith, Edward Washburn and George Wagner.

Alternates—Louis Donroe, William Kolowitz and Jack Lavery.

After some discussion on the proposed Amendments the meeting was taken over by our Librarian, Ed Washburn, who conducted a very interesting question box.

The Ladies Auxiliary under the direction of Mrs. J. Kotches took up a collection for the Soldiers at the Weequahic Rehabilitation Camp.

The meeting was adjourned at 11:00 P.M.

GEORGE WAGNER, *Sec'y*

DETROIT BRANCH

Detroit Branch held their last meeting of the fiscal year at the Hotel Statler on Friday evening, April 14, 1944 with President J. E. Fritts presiding over a gathering of slightly over one hundred members and visitors. The meeting opened with the usual business transactions, and six applicants were elected to membership. Their names follow:

James G. Bell, Active; George W. Harding, Active; John Toth, Active; Robert E. Greb, Active; Howard W. Knight, Active; Stanley E. L. Townsend, Associate.

The minutes of the last meeting were submitted and approved. Proposed amendments to the Constitution from Newark and Montreal Branches were presented to the members for their consideration. A committee consisting of the elected delegates and their alternates was appointed to study these proposed amendments and to report at the next meeting.

The election of officers for the year commencing May 1 1944 gave the following results:

President—R. B. Saltonstall
First Vice Pres.—Wright W. Wilson
Second Vice Pres.—J. J. Pawlich
Sec't-Treas.—F. L. Clifton
Librarian—P. W. C. Strausser
Board of Managers—J. E. Fritts, E. A. Hahn, H. E. Head.
Delegates to National Convention—W. L. Pinner, J. E. Bunch, C. E. Heussner.
Alternate Delegates—T. C. Eichstaedt, C. F. Nixon, W. E. Remington.

After the foregoing business had been disposed of the meeting settled down to enjoy a bus trip via the picture entitled "This Amazing America," which took us through mountains and valleys to several

of America's most remarkable scenic areas.

We were again fortunate in having for our speaker Mr. Floyd Oplinger from the DuPont Company, who is one of Detroit's favorites as he always has a subject of vital interest to the majority of platers; and his talk on "Replacement of Sodium Salts with Potassium Salts" in copper plating baths led to a large number of questions.

F. L. CLIFTON, *Sec'y-Treas.*

SYRACUSE BRANCH

A regular meeting of the Syracuse Branch of the A.E.S. was held on Friday, April 28 at Bowne Hall, Syracuse University.

The meeting was opened by Dr. N. F. Murphy, our president and the minutes were read.

The delegates for the national convention were elected along with the alternates.

The motion was made by Mr. Austin Fletcher that the Syracuse Branch for the first time pay the expenses of one of the regularly appointed delegates to the national convention with the provision that this delegate read a report on the proceedings at the convention at a dinner meeting to be held in June. The motion was seconded and carried.

A motion was made and carried that the Buffalo Branch be elected as proxy for the Syracuse Branch at the convention.

Following the business of the evening, the speaker of the day, Mr. E. B. Lewis of the Du-Lite Chemical Corporation, was introduced by Dr. Murphy. Mr. Lewis gave a very interesting talk on "Black Finishes on Ferrous and Non-Ferrous Metals." The talk was followed by a lengthy discussion period which indicated a very lively interest in the subject discussed.

NEIL C. MAFFEI, *Sec'y*

DETROIT BRANCH

Detroit Branch A.E.S. held the regular monthly meeting at the Hotel Statler on Friday, May 5, 1944.

Retiring President J. E. Fritts opened the meeting by thanking the members for their loyal support during his tenure of office. He paid special tribute to Mr. Chas. E. Beaubien for his long and faithful service to the Society.

The minutes of the last meeting were read and approved, and the officers elected at the April meeting were installed by Past Supreme President, W. M. Phillips, head of the electro-chemistry department of General Motors Research Laboratories.

With a plea for continued support of the members, our new president, Dr. R. B. Saltonstall, Udylite Corporation, took over the meeting and several applications for membership were submitted. Wilbur J. Butler was elected an associate member and Fred O. Johnson was made an active member.

There was some discussion regarding the proposed changes in the constitution. A vote was taken and it was decided that our delegates to the National Convention should not be "instructed."

The speaker of the evening, Mr. W. M. Phillips, was introduced, and after a few opening remarks there was shown a picture published by the Formica Co., which had a definite relation to the speaker's subject, as the film portrayed an outline of the chemistry involved in the manufacture of Formica as well as the laminating, forming and machining of a number of parts. Mr. Phillips then gave us an insight of the possible changes in specifications for automotive parts, stating that in his opinion much greater thicknesses of plates are needed if the plating industry is to keep pace with the customers' demands. Photographs showed that the old specifications gave good protection from rust if the car owners would take care of the plate. A number of samples were projected on the screen showing the use of plastics to replace plated parts, and combinations of plastics and metals.

A war picture "Communique #5" gave us a look at some of our boys in action flying P 47 Thunderbolts and several scenes of the landing and fighting at "Tarawa."

Librarian Paul W. C. Strausser took care of the question period, and the members expressed their desire for a continuance of the practice of showing pictures of an entertaining and instructive type. After adjournment of the meeting which was attended by 128 members and visitors, refreshments were served.

F. L. CLIFTON, *Sec'y-Treas.*

ST. LOUIS BRANCH

St. Louis Branch A.E.S. on April 20th held its April meeting at the Engineers' Club Auditorium with a record attendance of 208. The business meeting was opened at 7:45 P.M. and routine matters were given prompt attention, including the yearly report of our Secretary-Treasurer, election of branch officers and delegates to the

Cleveland Convention. The election results were as follows:

President—Frank Menniges
Vice-President—Charles Simon
Secretary-Treasurer—Charles McGinley
Board of Managers — John Moran, Bruce Roberts, Otto Dingeldein
Delegates—E. J. Musick, Charles McGinley, Alfred Barth
Alternates—John Vogt, Otto Dingeldein, Frank Cross

Nine members were elected to membership thus bringing our total for this fiscal year to 36 new members. As a token of respect to our dear member, Hedley Richards who passed away on March 20th, all stood with bowed heads for a moment and Mr. H. H. Williams and Mr. Burt Daw were instructed to act as a committee to draw up appropriate resolutions expressing our deep feeling to Mrs. Richards.

Our business session adjourned at 8:10 P.M. and the Engineers' Club took over and held a very brief business meeting in which they elected their slate of new officers and directors in a very smooth and dignified manner.

President L. O. Campbell of the Engineers Club after a warm welcome introduced President E. J. Musick who outlined the work of the A.E.S. particularly the St. Louis Branch activities, and he expressed much satisfaction over the attendance result of the joint meeting, which included 133 members of the Engineers Club and 75 members and guests of the A.E.S. President Musick then introduced Mr. Rudy Errington, our Librarian, who opened the Educational session at 8:25 P.M.

The first speaker, Mr. L. G. Tubbs, of the Mutual Chemical Co. of Baltimore, Md., presented a paper on the "Uses of Chromium Chemicals" in a thoroughly interesting manner. The second speaker was none other than Mr. W. W. McCord, past president of the Detroit Branch A.E.S. and until recently chief of the Electroplating Equipment Section of the W.P.B. at Washington, D. C., but now sales manager of the Chandeysson Electric Co. of St. Louis. Mr. McCord gave a "Resume" of the plating situation as it is today and its future as he sees it, in his usual cool matter of fact manner. We are glad to report that it is his opinion that unless unexpected war conditions arise, the plating industry will continue to be very good for some time to come. He also stated that he thought that even though there might be sufficient materials for resuming civilian production in the near future, the man power shortage and the desires of the Army and Navy agencies would prevent it.

Questions and discussion followed and both speakers were given a rising vote of thanks for their services and the meeting adjourned at 10:45 P.M.

This April meeting rounded out a very good year's program for St. Louis Branch. The following additional out-of-town speakers were kind enough to come to St. Louis and furnish us with very interesting talks and discussions:

Mr. E. C. Friedl, Technical Rep., E. I. DuPont De Nemours, Cleveland, Ohio. "Zinc Plating for the War Effort".

Mr. M. B. Diggin, Chief Chemist, Hanson Van Winkle Munning Co., Chicago, Ill. "Zinc Plating and Chromate Finishes".

Dr. A. E. Chester, Research Director, Poor Mfg. Co., Chicago, Ill. "Zinc Plating by Promat Process, Involving the Superimposition of Low Voltage Alternating Current on Direct Current".

Dr. D. A. Cotton, Delco Remy Div., General Motors Corp., Anderson, Ind. "Hard Chrome Plating".

W. E. Moline, Plating Research Laboratory, National Cash Register Co., Dayton, Ohio. "Black Nickel Plating, Industrial Work".

Three of our members, John Vogt, of Knapp-Morarch Co., Charles McGinley of Wagner Electric Co., and John Moran of Musick Plating Inc., were responsible for making three of our other meetings very interesting with their talks and samples of their work and the special racks used. An unusual and very good meeting was the one in which George Reuter, secretary of the Newark Branch for 15 years, now plating supervisor of Amertorp Corp. of St. Louis was chairman of a panel of five other plating experts and they really surprised themselves in the successful manner in which they answered the many plating problems that the boys fired at them.

President Campbell took the chair again and stated that he was so pleased with the joint meeting that we are invited to come again next year. He then requested all to retire to the large recreation room for refreshments, sandwiches and conversation, and did they do it, and how.

CHARLES MCGINLEY, *Sec'y-Treas.*

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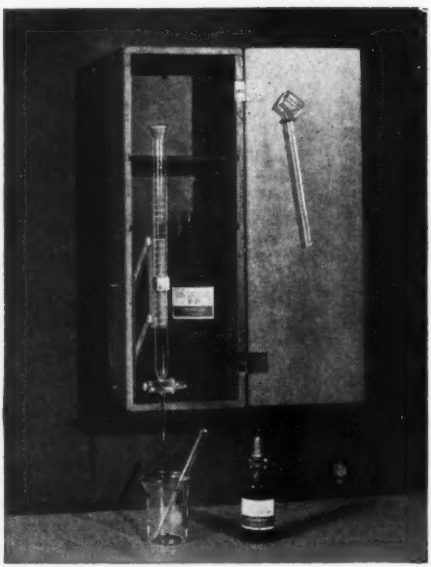

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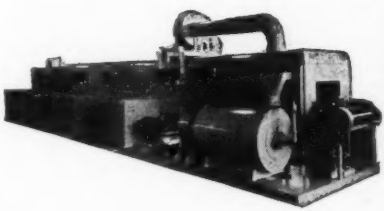

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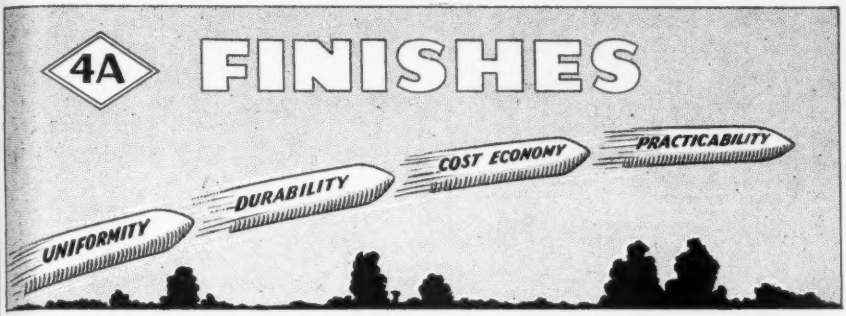

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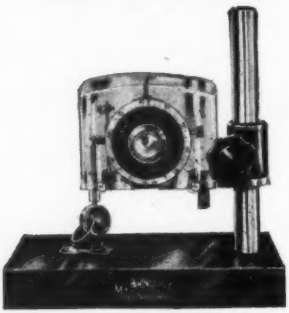

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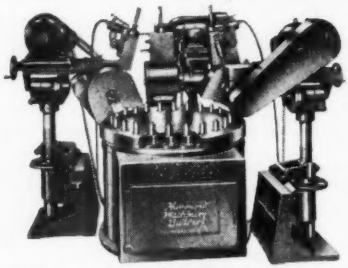

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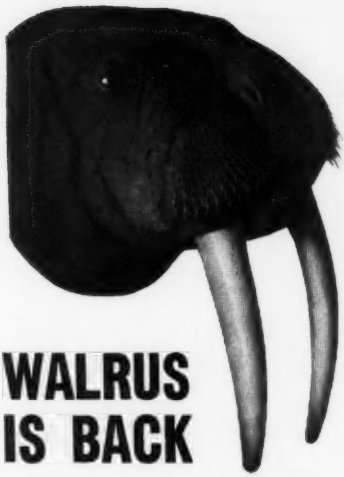

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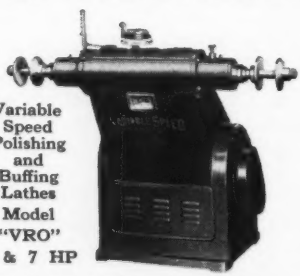

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To June, 1944

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HAROLD F. STEVENS, Towle Mfg. Co., Newburyport, Mass., Active
GEORGE FAIRBAIRN, 14 Rutland St., Cambridge, Mass., Associate
EDMOND W. KINDRED, 13 Lake Avenue, Woburn, Mass., Associate

Bridgeport Branch

JOSEPH JOHN RIVNYAK, 1287 Hillside Ave., Stratford, Conn., Associate
ALFRED W. SMART, 3 Squirrel Drive, East Rockaway, N. Y., Associate
KENNETH R. LONGNECKER, 77 Crystal St., Stamford, Conn., Associate

Buffalo Branch

JOSEPH D. GIBBY, 10 Wilmont Place, Buffalo 8, New York, Associate

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THOMAS F. LEVERY, 103 E. Norwich Ave., Columbus, Ohio, Associate
DARWIN HUFF, 2438 Glenmore Ave., Dayton 9, Ohio, Associate
H. HAROLD BULKOWSKI, 312 West Sixth Avenue, Columbus 1, Ohio, Associate

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ROBERT E. GREB, 394 East Center St., Decatur, Ill., Active
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HOWARD W. KNIGHT, c/o Metal Process Corp., 12891 Mt. Elliott, Detroit 2, Michigan, Active
JOHN TOTH, 2029 N. Melborn, Dearborn, Michigan, Active
STANLEY E. L. TOWNSEND, 15094 Dolphin Ave., Detroit, Michigan, Associate

Grand Rapids Branch

J. R. ROBERTS, 1529 Godfrey Ave., S.W., Grand Rapids, Michigan, Active
DONALD A. PAULL, 2293 Harding, Muskegon, Michigan, Associate

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JAMES L. MADDEN, 1117 Udell Street, Indianapolis, Ind., Active
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GLEE W. STACKHOUSE, 640 N. Gray Street, Indianapolis, Ind., Associate
HUGH N. DAVIS, 624 N. Drexel Ave., Indianapolis, Ind., Associate
CECIL L. PLATT, 1603 Maple Street, Columbus, Ind., Associate
ARTHUR L. CHESTERFIELD, Aluminum Finishing Corp., 1119 E. 22 Street, Indianapolis, Ind., Associate

ROBERT M. STRAIN, 34 S. Colorado Ave., Indianapolis, Ind., Associate
GEORGE BREMAN, 1220 Park #2, Indianapolis, Ind., Associate

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GEORGE H. BRONSON, 208 Clark Street, Milledyeville, Ga., Associate

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ARTHUR D. BROOKS, R. Wallace & Sons Co., Wallingfold, Conn., Active
RICHARD JOHNSON, R. Wallace & Sons Co., Wallingfold, Conn., Active
FRANK ENGSTROM, Schelborn Company, New Haven, Conn., Active
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FRANK SCHULZ, 130-28 225 Street, Laurelton, N. Y., Active

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SMITH BOTTING, 15 Avery Street, Sydney, N. Y., Associate
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JERRY CAPOBIANCO, 7 Ashley Street, Waterbury, Conn., Active
JOHN W. DAWSON, 111 S. Beckley Dr., Wichita 8, Kansas, Associate

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Cleveland Branch

MICHAEL KILROY, c/o United Platers, 94 Madison Ave., Detroit, Michigan, Associate

Milwaukee Branch

RALPH J. PADDOCK, 1601 Waldo Blvd., Manitowoc, Wisconsin, Active

New Haven Branch

ALBERT G. JAGUN, 16 Clifton Street, Seymour, Conn.

Waterbury Branch

HARRY M. JOHNQUEST, c/o Bristol Company, Waterbury, Conn., Associate

CHANGE IN STATUS

Dayton Branch

EUGENE COMBS from Associate to Active Membership
FRANK H. SCHLADER from Associate to Active Membership

New Haven Branch

HAROLD M. BARNARD from Associate to Active Membership
WILLIAM J. BERCIER from Associate to Active Membership
JOHN C. OBERENDER from Associate to Active Membership
JESS W. WHITNEY from Associate to Active Membership

Toledo Branch

KEMSLEY ALLISON from Associate to Active Membership
CHARLES VANNORSDALL from Associate to Active Membership

APPLICATIONS

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BEN SILVERMAN, 13 Oakhurst St., Dorchester, Mass., Active

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M. DASSINGER, 2555 N. Austin Ave., Chicago 39, Ill., Active
S. PESTONE, 2638 N. Pulaski Rd., Chicago 47, Ill., Active
H. E. ROGERS, 1400 Wrightwood Ave., Chicago 14, Ill., Active
H. BURNSON, 4014 W. Parker Avenue, Chicago 39, Ill., Associate
F. H. SANDERS, 1019 Nelson Street, Fort Wayne, Ind., Active
VON R. KAUFMAN, Pierceton, Indiana, c/o Whitley Products Inc., Associate
F. J. KEELEY, 53 W. Jackson Blvd., Chicago, Ill., Associate
C. E. WALCH, c/o Vacuum Can Co., 25 S. Hayne Ave., Chicago Ill., Associate
N. E. GARMAN, 147 S. Yale Ave., Villa Park, Ill., Associate
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SYRACUSE	51	+ 9	+17
INDIANAPOLIS	74	+ 9	+12
LOS ANGELES	123	+10	+ 8.1
NEW HAVEN	95	+ 6	+ 6.3
DAYTON	100	+ 3	+ 3
BRIDGEPORT	102	+ 3	+ 2.9
TORONTO	109	+ 3	+ 2.7
WATERBURY	111	+ 3	+ 2.7
NEW YORK	158	+ 4	+ 2.5
BOSTON	130	+ 3	+ 2.3
PHILADELPHIA	138	+ 3	+ 2.1
GRAND RAPIDS	109	+ 2	+ 1.8
BUFFALO	80	+ 1	+ 1.2
ROCHESTER	83	+ 1	+ 1.2
NEWARK	198	+ 2	+ 1
BALTIMORE-WASH.	107	+ 1	+ .93
CLEVELAND	115	+ 1	+ .86
HARTFORD	114	—	—
ST. LOUIS	111	—	—
MILWAUKEE	97	—	—
SPRINGFIELD	79	—	—
PITTSBURGH	68	—	—
PROV.-ATTLEBORO	66	—	—
CINCINNATI	63	—	—
JACKSON-LANSING	51	—	—
MONTREAL	50	—	—
TOLEDO	42	—	—
SAN FRANCISCO	39	—	—
ANDERSON	23	—	—
DETROIT	336	— 1	— .29
CHICAGO	323	— 3	— .92
LANCASTER	40	— 2	— 5

MEMBERSHIP MAY 1, 1944	=	3385
MEMBERSHIP JUNE 1, 1944	=	3443
GAIN IN MEMBERSHIP	=	58
Per Cent of Gain 1.7%		

BOOK DEPARTMENT

BOOK REVIEWS

By

DR. GEORGE DUBPERNELL, *United Chromium, Inc.*

"The Principles of Electrodeposition." Samuel Field. 314 pages. Pitman Publishing Corporation, New York, April, 1944. Price, $6.00.

This is an excellent but somewhat high-priced book in a field where there are no others, except perhaps, Glasstone's book published by the American Electroplaters' Society, which is distinctly more elementary. The various books on electroplating have one or two chapters on "Principles," but this appears to be the first attempt to elaborate a full sized book on the subject. The reviewer considers the attempt a successful one, on the whole, with some qualifications. Professor Field appears to have contented himself with what he considers basic and fundamental, and those things which he expects will be just as important ten years from now as now. The result is that many recent studies are not considered at all, and the book appears to lack up-to-dateness and to be one which we should have had ten or twenty years ago. However, we did not have it, and so it should be welcome now.

The sub-title is "The Electrochemistry of Electroplating," and the larger proportion of the material presented is also to be found in text books on Electrochemistry. In fact, the author suggests at the end of his Preface that this volume may also serve as a general introduction to the subject for the student of Electrochemistry. However, Professor Field's long association with the Electrodeposition of Metals assures that the material is pointed in this direction and is written as he states ". . . . with an industrial bias . . . ." He also states with regard to writing the book that ". . . . he essays the task with some trepidation in view of the wide range of knowledge which has to be bridged over in an attempt to present a simple yet convincing account of the deeper problems of the science of Electrodeposition, while avoiding the mathematical treatment called for by the requirements of the more academic student, and which characterizes the modern literature on the subject."

The book is very readable and descriptive in its nature, and mathematics has been almost entirely eliminated. Whatever formulas are necessary for the treatment of the subject are presented in an easily understandable fashion, and their usefulness and mode of use explained. No problems are given for self-study however. The chapter headings run as follows: Introduction, Qualitative Electrolysis, Quantitative

Electrolysis, Properties of Gases, Properties of Solutions, Electrolytic Conductance, Progress of Dissociation with Dilution, Transport Numbers, Applications to General Chemical Practice, Thermochemistry, Electrode Potentials, Accumulators, Hydrogen Ion Concentration, Electrode Reactions, Throwing Power, Separation and Co-Deposition of Metals, Addition Agents in Electrodeposition, Strong Electrolytes, Bi-Polar Electrodes, Subject Index, Author Index.

The chapter on Throwing Power is excellent as would be expected in view of the author's contributions to this field, but there is no consideration of recent studies of current distribution such as those of Lukens, Kasper, and Kronsbein. Likewise, there is an excellent chapter on Bi-Polar Electrodes, but it contains no discussion of recent developments in the use of "intermediate anodes" as an aid to uniform current distribution or a means of obtaining improved throwing power. The reviewer also expected to find some consideration of the electrodeposition of metals from the point of view of the long periodic system table of the elements in a theoretical book such as this, since he has been familiar with such correlations for many years, and papers on the subject have been published by Ellingham and Blum. The chapter on Addition Agents also seemed rather short and brief in view of recent emphasis on bright plating. It is to be hoped that omissions such as these will be rectified in future editions of the book, which is nevertheless a welcome addition to the literature of electrodeposition at this time.

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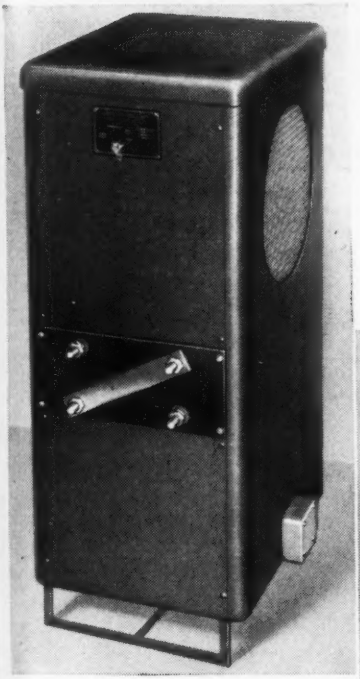

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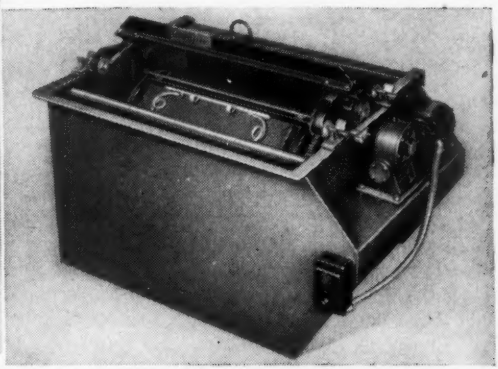

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American Buff Company 522
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American Instrument Co. 582
Apothecaries Hall Company .. 579

Bacon Felt Company 516
Baker Company, M. E. 580
Blakeslee & Company, G. S. .. 532
Brown Machine & Tool Company, L. P. 580

Ceilcote Company, The 584
Chandeysson Electric Co. 521
Chemical Corporation, The 538
Codman Co., F. L. & J. C. 519
Crane Euipment & Supply Co. 584
Cowles Detergent Co., The 527

Darco Corporation 540
Dextrex Corporation 559
Divine Brothers 585
Du Pont de Nemours & Co., Inc., E. I. 523

Egyptian Lacquer Manufacturing Co., The 542
Enthone Company, The 534

Formax Manufacturing Co. 558

Green Electric Co., Inc. W..... 525
Greene, Tweed & Company .. 583
Gumm Chemical Company, Fred'k. ..... Second Cover
General Chemical Co. 537

Hammond Machinery Builders, Inc. 582-584
Hanson-Van Winkle-Munning Co. 548-549
Harrison & Company 581
Harshaw Chemical Co., The 526
Hay Company, Jacob 585
Heatbath Corporation 539
Heil Engineering Company 582

Industrial Filter & Pump Co. 536
Industrial Timer Corp. 578
International Conveyor & Washer Corp. 579

Kocour Company 578

Lasalco, Inc. 503
Lea Manufacturing Co. Back Cover
L'Hommedieu & Sons Co., Chas. F. 547

Maas & Waldstein Company 517
Magnus Chemical Company 520
MacDermid, Inc. .... Third Cover
MacDermid Chemical Company, W. D. 533
Magnuson Products Corp. 584
Manderscheid Company, The 535
McGean Chemical Company .. 586
Meaker Company, The 515
Michigan Chrome & Chemical Co. 562
Michigan Buff Company, The 585
Mitchell-Bradford Chemical Company 585

Oakite Products, Inc. 501

Packer Machine Co., The 586
Pennsylvania Salt Company .. 528
Precimet Laboratories 586
Puritan Manufacturing Co., The 583

Quinn Company, Nelson J. 518

Seeley Company, E. E. 586
Sparkler Manufacturing Co. .. 560
Stevens Inc., Frederic B. 504
Storts Welding Company 564
Stutz Manufacturing Co., George A. 581

Udylite Corporation, The 595
United Chromium, Inc. 541 & 561

Westvaco Chlorine Products Corp. 502
Wyandotte Chemicals Corp. .. 543

Zapon Division, Atlas Powder Company 510

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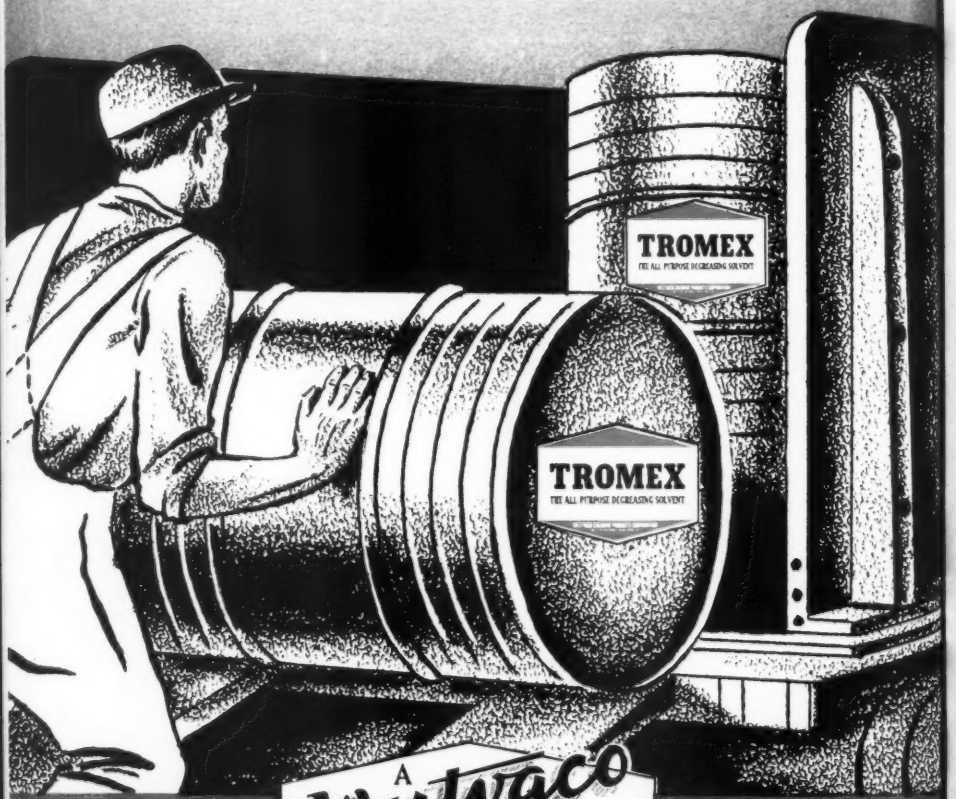

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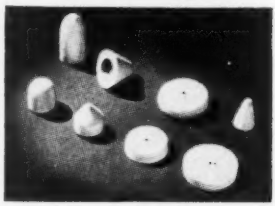

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